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MA-860

Installation and Configuration Guide

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MobileAccess

8391 Old Courthouse Road, Suite 300, Vienna, VA 22182

Tel: (866)436-9266, (703)848-0200 TAC: (800)787-1266, Fax: (703)848-0280

<http://www.MobileAccess.com>

Preface Material



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EXAMINE THE UNITS FOR ANY DAMAGE THAT MAY HAVE BEEN CAUSED IN TRANSIT. IF DAMAGE IS DISCOVERED, FILE A CLAIM WITH THE FREIGHT CARRIER IMMEDIATELY. NOTIFY MOBILEACCESS AS SOON AS POSSIBLE.

NOTE: KEEP ALL PACKING MATERIAL UNTIL YOU HAVE COMPLETED THE INSPECTION

WARNING: TO COMPLY WITH FCC RF EXPOSURE COMPLIANCE REQUIREMENTS, ANTENNAS USED FOR THIS PRODUCT MUST BE FIXED MOUNTED ON INDOOR PERMANENT STRUCTURES, PROVIDING A SEPARATION DISTANCE OF AT LEAST 20 CM FROM ALL PERSONS DURING NORMAL OPERATION.

WARNING: ANTENNA GAIN SHOULD NOT EXCEED 10 dBi.

WARNING: EACH INDIVIDUAL ANTENNA USED FOR THIS TRANSMITTER MUST BE INSTALLED TO PROVIDE A MINIMUM SEPARATION DISTANCE OF 20 CM OR MORE FROM ALL PERSONS AND MUST NOT BE CO-LOCATED WITH ANY OTHER ANTENNA FOR MEETING RF EXPOSURE REQUIREMENTS.

WARNING: THE DESIGN OF THE ANTENNA INSTALLATION NEEDS TO BE IMPLEMENTED IN SUCH A WAY SO AS TO ENSURE RF RADIATION SAFETY LEVELS AND NON-ENVIRONMENTAL POLLUTION DURING OPERATION.

ATTENTION:

COMPLIANCE WITH RF SAFETY REQUIREMENTS:

MOBILEACCESS™ PRODUCTS HAVE NO INHERENT SIGNIFICANT RF RADIATION.

THE RF LEVEL ON THE DOWN LINK IS VERY LOW AT THE DOWNLINK PORTS. THEREFORE, THERE IS NO DANGEROUS RF RADIATION WHEN THE ANTENNA IS NOT CONNECTED.

Safety



WARNING! To comply with FCC RF exposure compliance requirements, antennas used for this product must be fixed mounted on indoor permanent structures, providing a separation distance of at least 20 cm from all persons during normal operation.

1. Each individual antenna used for this transmitter must be installed to provide a minimum separation distance of 20 cm or more from all persons and must not be co-located with any other antenna for meeting RF exposure requirements.
2. The design of the antenna installation needs to be implemented in such a way so as to ensure RF radiation safety levels and non-environmental pollution during operation.

Compliance with RF safety requirements:

- MobileAccess™ products have no inherent significant RF radiation.
- The RF level on the downlink is very low at the downlink ports. Therefore, there is no dangerous RF radiation when the antenna is not connected.

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Certification^[MP1]

MA-860 has met the approvals of the following certifying organizations:

Product Certifications

US FCC 47 CFR part 15B, 15C, 15E

NOTE: 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 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning!

Changes or modifications to this equipment not expressly approved by Mobile Access Ltd. could void the user's authority to operate the equipment.

UL 60950-1

Europe EN 301502, EN 300609, EN 301489, EN 60950-1, IEC 60825-1, IEC 60825-2^[MP2]

Company Certification

ISO 9001: 2000 and ISO 13485: 2003

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Professional Installation of Transmitter

According to FCC 15.203, if an intentional radiator has a standard antenna connector, it must be professionally installed according to FCC 15.203 regulations:

1. The MA-860 cannot be sold to the general public. Only professional installation qualified ("licensed") by MobileAccess for this purpose is aloud to install the MA-860.
2. The installation must be controlled and follow the requirement of "Installation Manual" (P/N:709C001103). Each potential installer must receive special training, which is a condition for receiving the license from MobileAccess Inc to become a "licensed" installer. The installation procedure as described in the "Installation Manual" includes the mechanical installation and initial setup by a PC based tool.
3. The intended application of the system is exclusively for the commercial/industry use.

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About This Guide

This user guide provides all the information necessary to install and configure the MobileAccess MA-860 and MA-860-U[MP3] units. All *references to MA-860* apply to MA-860-U.

Revision History

The revision history for this document is shown in Table 1-1.

Table 1-1: Revision history

P/N and REV	Date	Description
--	25-MARCH-07	Initial version
	10-April-07	Yehuda's comment's on initialization period of 1 min before connecting GUI and comments on cable adjustment procedures.
	April 19	Completion of initial version

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List of Acronyms

802.11a	WLAN IEEE Standard for 5GHz band
802.11b/g	WLAN IEEE Standard for 2.4GHz ISM band
AGC	Automatic Gain Control
AP	Access Point
ARM	Adaptive Radio Management
BDA	Bi-Directional Amplifier
BU	Base Unit
DL	Downlink
LED	Light Emission Diode
RHU	Remote Hub Unit
RRM	Remote Radio Management
RTLS	Real Time Location Systems
SCU	Splitting and Combining Unit
SNR	Signal to Noise Ratio
UL	Uplink

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1

Introduction to the MA-860 System

This chapter provides a description of the MA-860 system, its architecture, installation configurations, operation and required commissioning procedures.

1.1 About MobileAccess MA-860



Figure 1-1. MobileAccess MA-860

MA-860 solution is part of the MobileAccess third generation family of products for Wireless LAN infrastructure.

The MA-860 solution combines a SMART EDGE control unit and antenna control capabilities to provide centralized, secure AP management with greater range and coverage visibility.

The MA-860 system can be used as stand-alone - providing only WiFi coverage, or in conjunction with MobileAccess Mobile Service elements – combining WLAN with other wireless services for distribution over a common infrastructure.

A truly integrated solution offering a combined services approach to distribute WiFi, cellular/PCS, public safety, and WMTS through a single antenna infrastructure while maintaining a reliable application independent environment.

1.1.1 MA-860 Features and Capabilities

- **Multi-use infrastructure:**

The same cables and antennas used for Wi-Fi can be used to support the simultaneous extension and distribution of other wireless voice and data services, as follows:

- o Support for four 802.11a/b/g APs
- o Mobile services from MobileAccess 1000/2000 or ModuLite remote units

- **Simple installation and maintenance:**

- o All active elements are in the telecom shaft or closet
- o All data and voice services distributed via a common coax cabling and broadband antennas
- o AP Clustering - 802.11 access points (APs) connect to the MA-860 in telecom closets
- o Auto-discovery of antennas
- o Cable compensation procedure at the click of a button

- **Scalable:** Additional APs connected as needed to the MA-860

- **Management:**

- o Robust system management - Familiar SNMP-based management provides proactive visibility and control of the MA-860 based Wi-Fi infrastructure.
- o Management through local RS232 connection and remote WEB management

- **Wi-Fi applications transparency** - The MA-860 uses discrete, active/passive antennas to radiate 802.11 signals, providing a coverage architecture that replicates the behaviors necessary to transparently support advanced AP features and location-sensitive Wi-Fi applications such as RTLS or LBS.

- **High-power** - With integral constant gain amplifiers combined with its low-loss architecture, the MA-860 offers scalable support for demanding applications such as wireless VoIP and 802.11a

- **Antenna Gain Control** - enable adjusting signal levels according to changing site infrastructure or density

- **Redundancy** - dual power unit in antennas

1.2 System Architecture

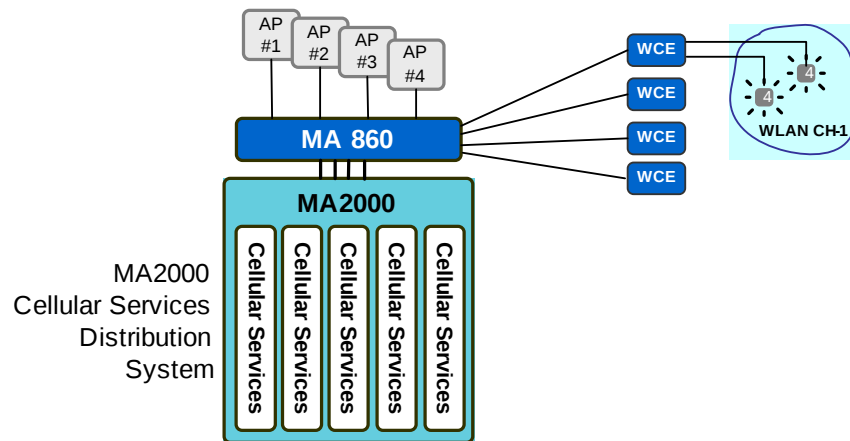
The MA-860 system consists of the following main *functional* modules:

- **MA-860 Controller module** – provides the *802.11a and 802.11b/g interfaces* to the corresponding 802.11 AP ports and implements the (local and remote) *monitoring and control*/functionality.
- **WiFi Coverage Expansion (WCE) units** – antenna control unit installed adjacent to the antennas. Each WCE supports two antennas. It enables remote management of antennas.
- **SCU** – external module that enables converging MA1000 mobile services with MA-860 data services for distribution over the same antenna (and WCE) infrastructure.

Note: The MA-860 system is fully functional without the SCU unit and can be used in this way in installations that do not require special combining/splitting on the Mobile services.

- **Multi-service Antennas** – MobileAccess or any compatible multi-service antennas.

The following figure shows the MA-860 services converged with MA2000 services. Note that SCUs are *not* required for MA2000 systems – only for MA1000. Detailed information on the various installations is given in section 1.4.



[MP4][MP5]

Figure 1-2. MobileAccess MA-860 Functional Block Diagram

1.3 Distribution of Services in the MA-860

The MA-860 distributes mobile and data services via the same antenna infrastructure. The 802.11a/b/g signals from each AP port connection are distributed to the corresponding antenna port along with any mobile services interfacing to the mobile services ports.

For example, the signals from an AP connected to MA-860 **b/g-1** and **a-1** are routed to **antenna-1** along with mobile services connected to Mobile port-1. Signals from an AP connected to MA-860 **b/g-2** and **a-2** are routed to **antenna-2**, along with mobile services connected to Mobile port-2.

Note: Mobile services (in installations where MA-860 units are integrated into MA 1000/2000 installations), the mobile services are distributed over the antenna ports corresponding to the SMA connection ports.

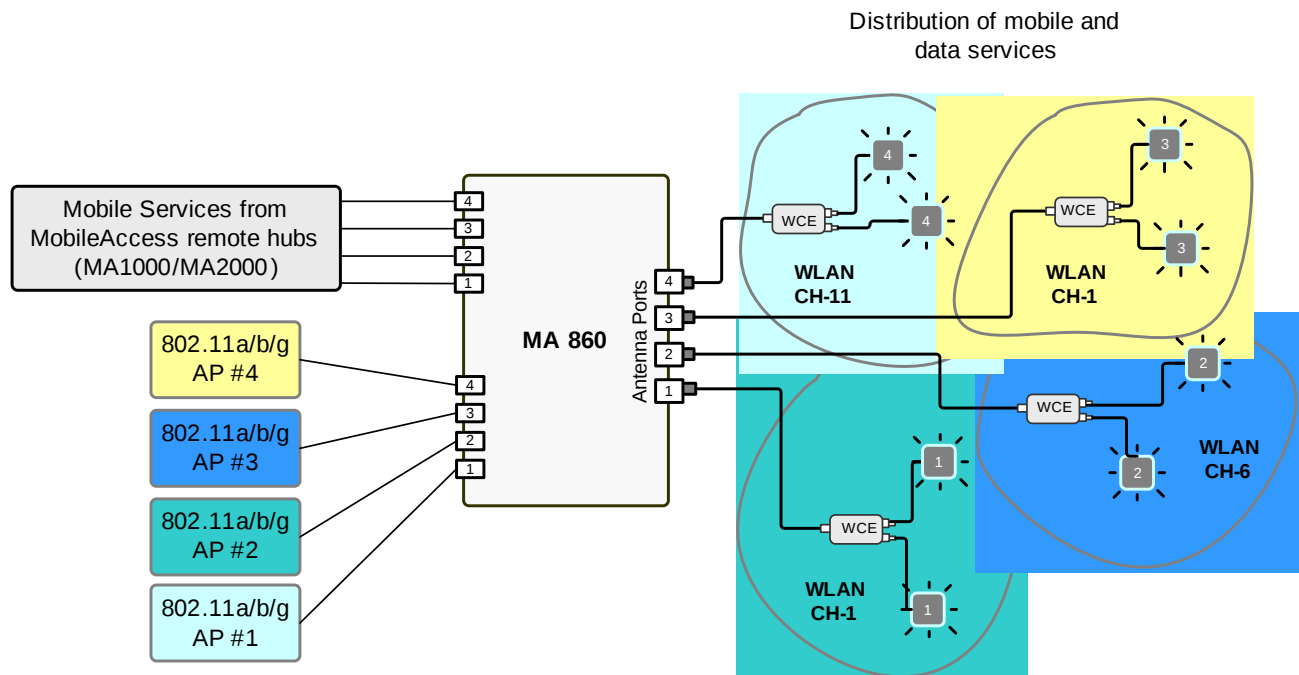


Figure 1-3. Example of 802.11a/b/g Signal Distribution

1.4 Installation Configurations

MA-860 can be installed in the following configurations:

- Standalone – to provide coverage for 802.11a/b/g services only
- Add-on to a MobileAccess 1000 series RHU (with and without MA 1200 add-on)
- Add-on to MobileAccess 2000 system

NOTE: In all installation types, all the signals are converged via the MA-860 and distributed via the WCE antennas connected to the **MA-860** antenna ports.

1.4.1 Standalone

In this type of installation configuration, MA-860 distributes only 802.11a/b/g services over the connected antenna infrastructure.

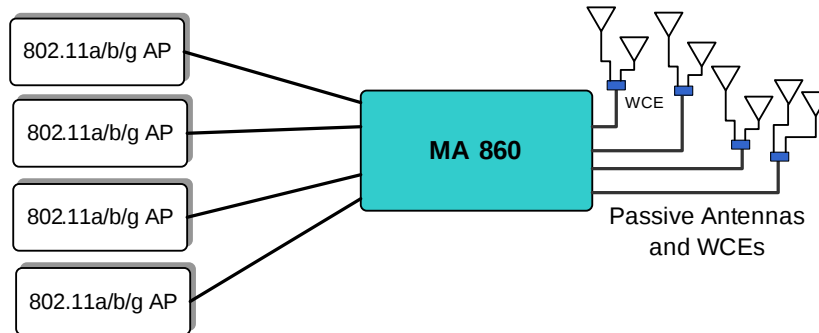


Figure 1-4. MA-860 Standalone Installation Configuration

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1.4.2 Converged with MA 1000 RHU Services

The MA-860 can be installed as an add-on unit to a MA 1000 RHU. In this type of installation, the **MA 1000 RHU services** are routed to the **MA-860 inputs** where they are integrated with the MA-860 Wi-Fi data services and routed to the MA-860 antenna ports for distribution over a single coax broadband antenna infrastructure.

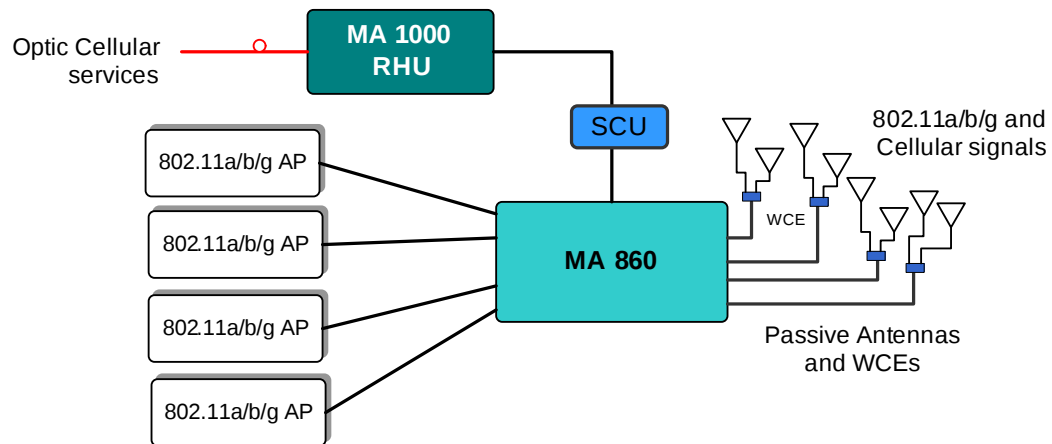


Figure 1-5 MA-860 as Add-On to MA 1000 System

1.4.3 Add-on to MA 2000 System

The MA-860 can be installed as an (external) add-on unit to the MA 2000 system. In this type of installation, the combined MA 2000 services are routed to the MA-860 inputs where they are integrated with the MA-860 Wi-Fi data services and, through the MA-860 antenna connections, distributed through the same coax broadband antenna infrastructure.

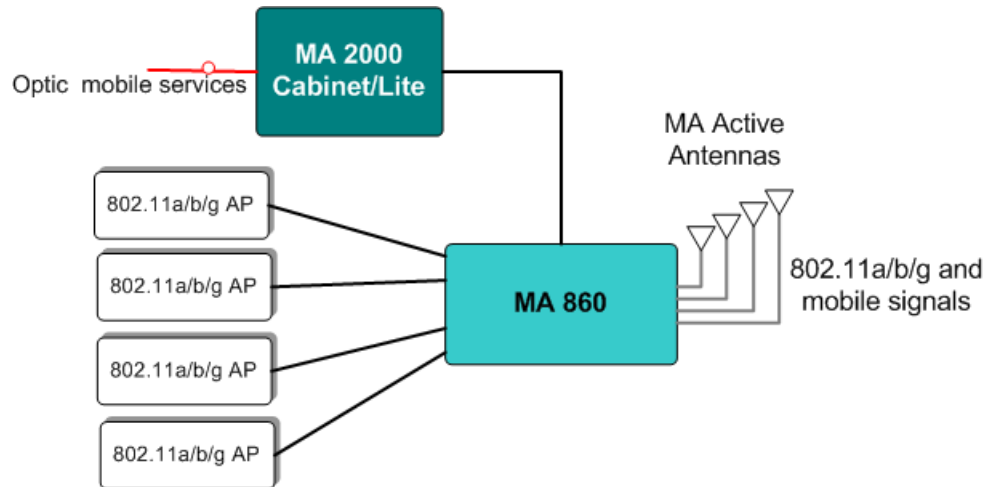


Figure 1-6. MA-860 Add-On to MA 2000 System

1.5 Provisioning and Management

MA-860 supports two types of management applications – local and remote:

- **MA-860 Configuration Tool** – application installed on a computer (i.e. laptop) and used after the system has been installed for initial configuration, calibration and system provisioning. This is done via a local (RS232 connection) between the computer running the application and the MA-860 control module. The application is described in section 5.2)
- **MA-860 Web Access** application – used after the initial provisioning procedure to remotely manage and control the system. This is done by opening a session to the MA-860 control unit IP address. (The IP address is configured for DHCP by default – but can be set as static).

1.6 Vendor Approved APs and Antennas

This section describes the APs and Antennas that can be used with the MA-860 system.

1.6.1 List of Vendor Approved APs

The following vendor Access Points have been verified and FCC approved.

Table 1-1. Approved Access Points

FCC ID	Model	Functionality	Access Points
	MA-MA-860		CISCO 1232, 1242
	MA-MA-860		Aruba AP 60. 61, 70
	MA-MA-860		Colubris AP

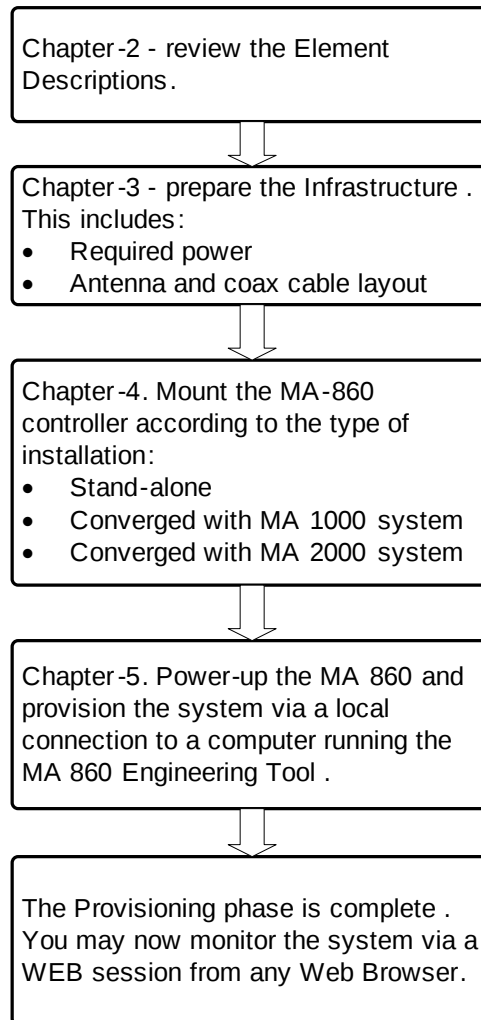
1.6.2 List of Vendor Approved Antennas

The following vendor Antennas have been verified and FCC approved.

- GE
- MobileAccess antennas
- 3PE antennas

1.7 Installation and Configuration Workflow

The following workflow diagram shows the recommended approach for using this User Manual to install and provision the system.



2

Element Descriptions

This chapter describes each of the system elements and includes detailed information on the elements' interfaces.

The following modules are described:

- MA-860 controller
- WCE
- SCU

2.1 MA-860 Controller

The MA-860 controller performs the following operations:

- Concentrates the data services from up to four 802.11a/b/g APs
- Converges mobile services with data services
- Provides local and remote (WEB access) control and management capabilities

2.1.1 Front Panel Connections and LEDs

The front panel contains the antenna connections and mobile services connections, power and local setup connections. The following figure shows the MA-860 front panel.

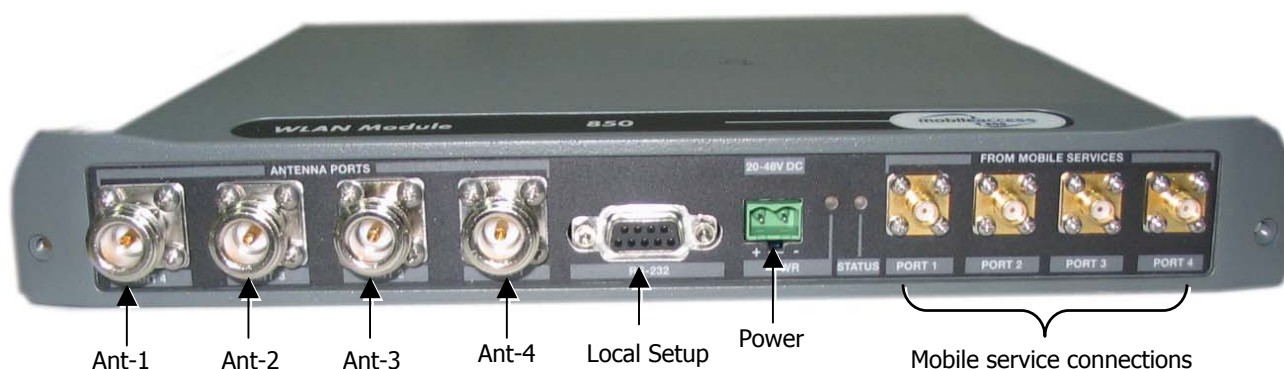


Figure 2-1. MobileAccess MA-860 Front View

Front Panel Ports

The following table describes the front panel ports.

Front Panel Ports	Description
Antenna Ports 1..4	Four N-type female antenna connections
Mobile Services	Four SMA female connections used in installations that integrate MA 860 with MA 1000 RHUs or MA 2000 services. NOTE: To be terminated with 50 ohm terminations when not in use.
Local Setup	RS232 connection for local setup (see section 5.1).
Power	Power connection: 20 to 48 VDC (see 3.3.3)

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Front Panel LEDs

The front panel contains two LEDs, described in the following table.

Front Panel LEDs	Description
Run	Internal operation and channel operation status: - o Green constant – unit performing antenna auto-discovery. This happens only upon power-up. - o Green blinking – Auto-discovery completed and unit OK. - o Off – fault detected in unit (if power is supplied)
PWR	Green – Power OK. Off – no power supplied to the unit.

2.1.2 Rear Panel Port Connections and LEDs

The rear panel contains the 802.11a/b/g AP connections, Ethernet connection for remote management and antenna sensing connector.

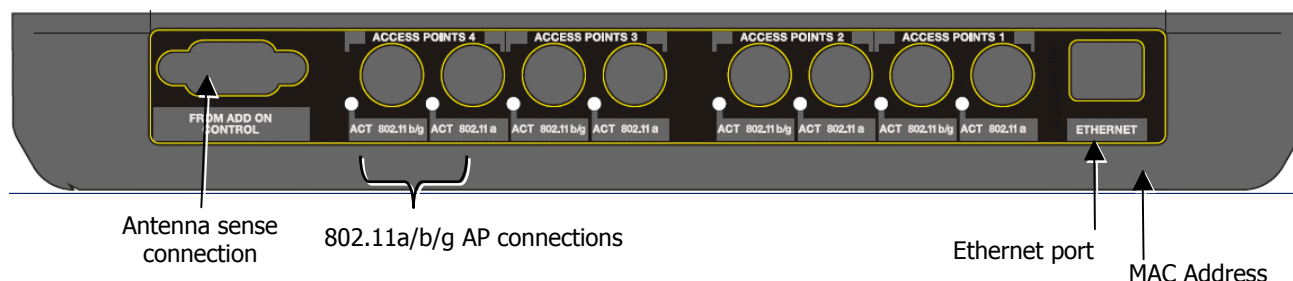


Figure 2-2. MobileAccess MA-860 Rear View

Rear Panel Ports

The following table describes the rear panel ports.

Rear Panel Ports	Description
802.11b/g APs	APs 802.11b/g input connections. (See LED descriptions in the following table). NOTE: To be terminated with 50 ohm terminations when not in use.
802.11a APs	APs 802.11a input connections. NOTE: To be terminated with 50 ohm terminations when not in use.
From Add-on to Control	Relevant only when MA-860 is converged with another MA system remote unit (RHU 1000, RHU WiMAX[MP6]). Connects to RHU 1000 rear panel Control connector. Routes the antenna sensing (indication of whether antenna is present) to the RHU for monitoring via the management application. (RHU Version 3.1 and higher).
Ethernet port	Connection to network for configuration and management through a WEB browser.

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The AP LEDs indicate connection point of corresponding 802.11 AP.

Rear Panel LEDs	Description
Blinking green	AP connected and working.
Green constant	AP connected and working and cable adjustment procedure (see section Error! Reference source not found.) for that link succeeded.
Off	AP not connected or no activity detected.

2.2 WCE

- Per-band gain amplifies and delivers optimal coverage for 802.11a/b/g services
- Supports any GE, MobileAccess, or 3PE antenna
- Supports all wireless services in single package
- Powered by the MA-860 via coax

2.3 SCU

3

Infrastructure Preparation

This chapter contains information on the cabling and power requirements for the MA-860 system, as well as the access points that can be used.

3.1 Installation Requirements

The infrastructure preparation consists of two main phases:

1. **Floor Planning:** Planning the distribution of the antennas on each floor to provide the required coverage. This phase varies depending on whether the coverage is only for WLAN or includes voice coverage through the existing infrastructure:
2. **Telecom Closet Planning:** Planning the layout of the devices and cables in the telecom closet or shaft. This includes the MA-860, 802.11 Access Points, cabling and other voice service distribution systems such as MA 1000/2000 that are relevant to the specific installation.

3.2 Coaxial Cable Connections

3.2.1 General Cable Installation Procedures

- Observe the general cable installation procedures in accordance with the building codes in your area.
- The building code requires that all cabling be installed above ceiling level (where applicable). Each length of cable from the risers to each antenna must be concealed above ceiling.
- The cable must be properly supported and maintained straight. This is done either by using tie wraps or cable trays and clamps or hangers every 10 feet (where practical above ceiling level). Where this is not obtainable, the following should be observed:
 - The minimum bending radius of the supplied ½" coax cable should be 7".
 - Cable that is kinked or has a bending radius smaller than 7" must be replaced.
 - Cable runs that span less than two floors should be secured to mechanical structures that are suitably located.
- The cables should be supported only from the building structure.

3.2.2 RF Rules

- Use coax ½", 50ohm, male-to-male N-type, (6-7dB for 1Ghz, 11dB for 2Ghz) for connecting to RHU and RHU ports.
- Use coax RG223, 50ohm, male-to-male N-type for RF connections from the BUs to the BTS/RBS and to the RIU.
- When using the MobileAccess™ system in an environment in which other indoor coverage systems are installed, it is recommended (where possible) that the antennas are placed at least **three** meters apart
- When bending coax cables, verify that the bending radius does not exceed the coax specifications.
- Use only antennas listed in section TBD
- Use a VSWR meter (i.e. Site Master or equivalent) for checking coax cables, including the antennas. (<2). The VSWR must be measured prior to terminating the RHUs in the remote communication rooms
- Terminate all unused **MA-860** ports with a 50 ohm load

3.3 Power Consumption, Connections and Power Supplies

3.3.1 Power Safety Instructions



SAFETY WARNINGS

When installing or selecting the power supplies:

1. Be sure to disconnect all power sources before servicing.
2. Calculate the required power according to the requirements of the specific installation and then determine the configuration of the power supplies. The required DC cables will then be determined by the selected PS configuration.
3. Use only UL approved power supplies
4. AC and DC power supply cables – use only the power cords supplied with the units

3.3.2 MA-860 Power Consumption

Table 3-1. MobileAccess™ Power Requirements

Unit Type	Voltage Input	Typical Power Consumption
MA-860	20 to 48VDC	40W
MA-860 Redundant Power Supply (Future option)	20 to 48VDC	40W

3.3.3 Types of Power Supplies

NOTE: Use only UL approved power supplies with SELV outputs.

Table 3-2: MobileAccess™ Power Supplies

Power Supply	
LPS-48V-66W	Local AC/DC Converter 66W

3.3.4 Power Connections

The power connections vary according to the MA-860 installation topology. The following power supplies are recommended for local power configuration, where *power can also be supplied using remote power supply configurations.*

- Use a dedicated power supply (i.e. LPS-48-66W – refer to the Power Supplies Manual) for the following installations:
 - MA-860 standalone

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- Combined with ModuLite MRC or 2000 Cabinet/Lite

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- LPS-48-100W (recommended)[MP7] - combined with the MA 1000 RHU. Feeds both modules
- In-line power supply connected through a coax cable.

3.4 MA-860 In-building Antennas

The in-building antennas are connected to the coaxial cable distribution system by jumper cables at various points. The antennas will be mounted on the ceiling tiles and should be exposed. All in-building antenna installations will be such that it will not interfere with indoor traffic and will not enable any person to touch the antennas.

3.4.1 Antenna Connections

NOTE: If the MA-860 system installation does not include cellular service, it is required to connect **50Ω termination** points to each of the remote connectors in the unit. A 50 Ω termination is also required on each unused AP port.

- 50 Ω, 1/2" or 3/8" Plenum coax cables
- Max cable length: 150' (*future – 200'*)
- 50 ohm terminator on unused connections
- For short jumpers (to MRC antenna ports): RG223 2 ft or 10 ft male-to-male coax jumpers

3.5 Access Points Installation

This section lists the vendor approved APs and the procedures required to prepare the APs for operation.

3.5.1 List of Vendor Approved APs

The following vendor Access Points have been verified and FCC approved.

Table 3-3. Approved Access Points

FCC ID	Model	Functionality	Access Points
	MA-MA-860		CISCO 1232, 1242
	MA-MA-860		Aruba AP 60. 61, 70
	MA-MA-860		Colubris AP

3.5.2 Updating FCC Certification on each AP

Each MA-860 system is supplied with FCC certification labels compatible with the MA-860 and the used APs. Enough labels are provided to support all possible installation combinations.

Perform the following procedure on each AP

1. Referring the Table 3-3, choose the supplied label(s) corresponding with the currently connected AP. For example, FCC ID label **OJFMA-860** for AP Cisco 1230.
2. Stick the label on the AP, near the existing certification labels, making sure it does not cover or obstruct the view of other certifications or required information.

3.5.3 AP Termination

A 50 Ω termination is required on each unused AP port. The type of termination is vendor specific:

Vendor	Model	Termination
Cisco	1242/1242	RP-TNC
Aroba	61/70	RP-SMA
Colabn's	AP	RP-SMA

4

Installation

This chapter contains the installation and connection procedures for various installation configurations. MA-860 may be installed in the following configurations:

- Rackmount
- Wall mount standalone – mounted directly on the wall with four screws
- Mounted onto an MA 1000 RHU
- Mount as add-on to an MA 1000 RHU with an MA 1200 add-on unit
- Add-on to a MA 2000 system

4.1 Accessory Kits - TBD_[MP8]

Verify that the supplied accessory kit corresponds to your installation. The accessory kits include a bracket, the required cables and accessories.

4.2 Placing the Unit and Recording Location

MobileAccess MA-860 is typically installed in the communication shaft or cabinet of each floor to which WLAN coverage is to be supported. The accessories, mounting and installation procedures vary depending on the installation configuration.

4.3 Standalone Wall Mount Installation

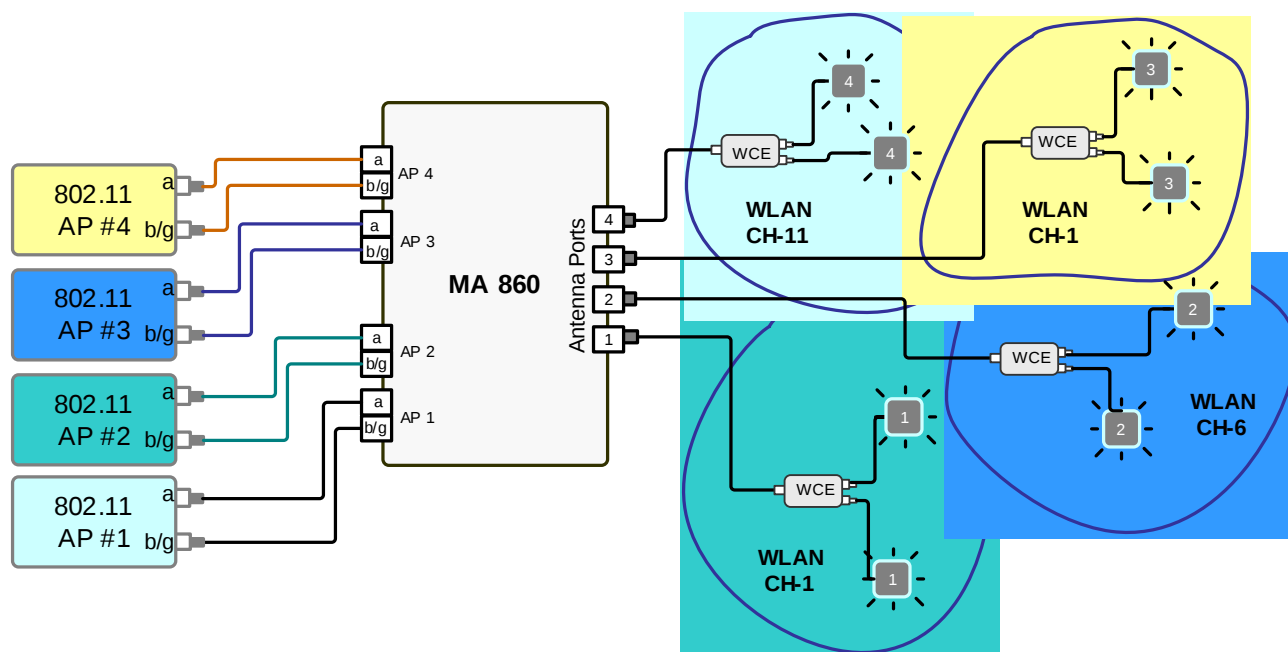


Figure 4-1. MA-860 Standalone Installation Configuration

NOTE: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

Although it is not required for a stand-alone installation, it is recommended to set the supplied cable **705102101** aside (usually used when MA-860 is installed in an add-on configuration). You will need it if you want to upgrade your system to provide additional coverage options.

ATTENTION: Use SMA wrench for the SMA connectors, do not over tighten the connectors.

To install MA 860 wallmount standalone configuration

1. Mount the MA-860 on the wall using four screws. When mounting, consider the following:

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- The type of screws used to mount the unit must suit the type of wall construction (cement, bricks, etc.) so that the mount is secure.
 - The position of the APs and required cable connections.
2. Connect the **power**. It is recommended to use the following power supply for local power configuration, where *power can also be supplied using remote power supply configurations*:
 - Dedicated power supply (i.e. LPS-48-66W – refer to the Power Supplies Manual)
 3. Connect the 802.11a/b/g Access Points to the corresponding ports on the MA-860 rear panel. Refer to section 1.3 for a description of the connections and distribution patterns.

NOTE: It is recommended to RESET the unit by removing and reinserting the power connector on the front panel after connecting the APs.

4. Connect the coax **antenna** cables to the MA-860 unit antenna ports on the MA-860 front panel according to the following instructions:
 - Use 50 Ω , N-type male to male, 1/2" or 3/8" Plenum coax cables
 - Max cable length (typically): 150'
5. Fit 50 ohm terminators on all unconnected SMA, AP and antenna ports.
6. Connect the network connection to the MA-860 rear panel network port.

NOTE 1: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

4.4 Add-on to an MA 1000 System Installation

In this type of installation, the MA-860 and MA 1000 RHU are assembled together with a *bracket* between them.

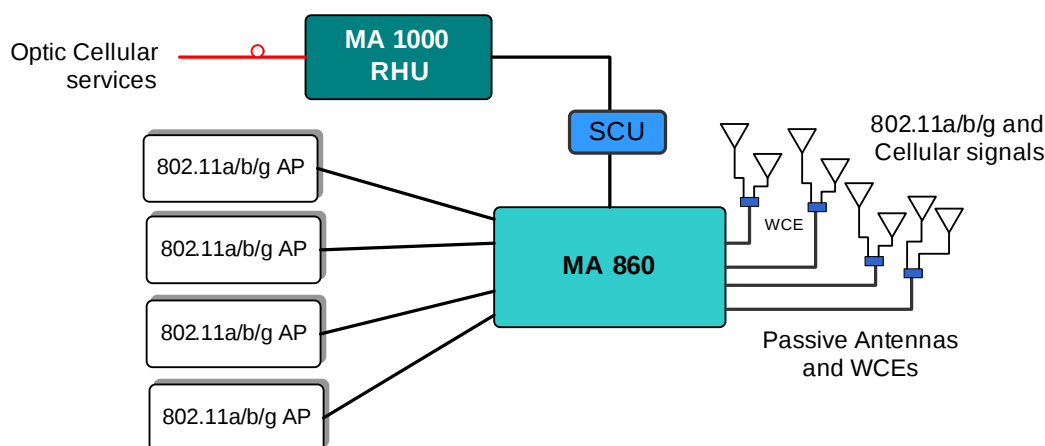


Figure 4-2 MA-860 as Add-On to MA 1000 System[MP9]

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NOTE: It is recommended to mount the MA-860 to the wall, and the MA 1000 on top of the MA 860 (with a bracket between them). However, if a previous MA 1000 RHU is present, you may install the MA-860 on top of the existing MA 1000 RHU (with a bracket between them).[MP10]

To assemble an RHU 1000 onto an MA 860

1. Assemble the supplied bracket to the top of the MA-860, where the notched side of the bracket is towards the rear of the unit. Secure the bracket to the MA-860 unit using the four supplied screws.



Figure 4-3. MA-860 and Bracket Assembly

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2. Mount the MA-860 and bracket assembly to the wall. When mounting, consider the following:
 - The type of screws used to mount the unit must suit the type of wall construction (cement, bricks, etc.) so that the mount is secure.
 - The position of the APs and required cable connections.
3. Mount the MA 1000 RHU to the bracket using the four provided screws.
4. For antenna sensing support (RHU 1000 version 3.1 and higher), connect between the **Control** connectors at the rear of both units using cable **705102101**.

NOTE: For antenna sensing support in RHU 1000 version 3.0 and lower, upgrade to a higher version according to the *MA 860 Upgrade Procedure Guide*.



5. Connect the 802.11a/b/g Access Points to the corresponding ports on the MA-860 rear panel. Refer to section 1.3 for a description of the connections and distribution patterns.

NOTE: It is recommended to RESET the unit by removing and reinserting the power connector on the front panel after connecting the APs.

6. Connect the network connection to the MA-860 rear panel network port.

NOTE 1: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

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7. Connect the **MA 1000 antenna** ports and the **MA-860 Mobile Services** ports using the four SMA to N-type cables *supplied in the accessory kit*.

NOTE: Be sure the connectors are closed at a 45 degree angle so as not to place stress on the cables.



8. Connect the **power**. It is recommended to use the following power supply for local power configuration, where *power can also be supplied using remote power supply configurations*:
- Dedicated power supply (i.e. LPS-48-100W which feeds both modules). Refer to the Power Supplies Manual.
9. Connect the coax **antenna** cables to the MA-860 unit antenna ports on the MA-860 front panel according to the following instructions:
- Use 50 Ω , N-type male to male, 1/2" or 3/8" Plenum coax cables
 - Max cable length (typically): 150'
10. Fit 50 ohm terminators on all unconnected SMA, AP and antenna ports.

4.5 Add-on to an MA 1000 with MA 1200

In this type of installation, the MA-860 and MA 1000/1200 assembly are separated by a bracket.

NOTE: It is recommended to mount the MA-860 to the wall, and the MA 1000/1200 assembly on top of the MA 860 (with a bracket between them). However, if a previous MA 1000/1200 assembly exists, you may install the MA-860 on top of the existing assembly, (with a bracket between them.)

To assemble an RHU 1000 onto MA 860

1. Assemble the supplied bracket to the top of the MA-860, where the notched side of the bracket is towards the rear of the unit. Secure the bracket to the MA-860 unit using the four supplied screws.



Figure 4-4. MA-860 and Bracket Assembly

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2. Mount the MA-860 and bracket assembly to the wall. When mounting, consider the following:
 - The type of screws used to mount the unit must suit the type of wall construction (cement, bricks, etc.) so that the mount is secure.
 - The position of the APs and required cable connections.
3. Assemble the MA 1000/1200 assembly to the MA-860 bracket.
4. For antenna sensing support (RHU 1000 version 3.1 and higher), connect between the **Control** connectors at the rear of both units using cable **705102101**.

NOTE: For antenna sensing support in RHU 1000 version 3.0 and lower, upgrade to a higher version according to the *MA 860 Upgrade Procedure Guide*.



5. Connect the 802.11a/b/g Access Points to the corresponding ports on the MA-860 rear panel. Refer to section 1.3 for a description of the connections and distribution patterns.

NOTE: It is recommended to RESET the unit by removing and reinserting the power connector on the front panel after connecting the APs.

6. Connect the network connection to the MA-860 rear panel network port.

NOTE 1: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

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7. Connect the **MA 1000 antenna** ports and the **MA-860 Mobile Services** ports using the four SMA to N-type cables *supplied in the accessory kit*.

NOTE: Be sure the connectors are closed at a 45 degree angle so as not to place stress on the cables.



Figure 4-5. Connection of MA-860 and MA 1000 Service Ports

8. Connect the **power**. It is recommended to use the following power supply for local power configuration, where *power can also be supplied using remote power supply configurations*.
 - Dedicated power supply (i.e. LPS-48-100W which feeds both modules). Refer to the Power Supplies Manual.
9. Connect the coax **antenna** cables to the MA-860 unit antenna ports on the MA-860 front panel according to the following instructions:
 - Use 50 Ω , N-type male to male, 1/2" or 3/8" Plenum coax cables
 - Max cable length (typically): 150'
10. Fit 50 ohm terminators on all unconnected SMA, AP and antenna ports.

4.6 Add-on to an MA 2000 System

MA-860 may be integrated into the MA 2000 system using one of the following installations:

- Installing it directly on the MA 2000 RC top panel (using the supplied plate);
- Mounting it on a rack (using the supplied plate);
- Wall-mount near the MA 2000 cabinet.

NOTE: The coax outputs of the cabinet are connected to the appropriate ports on the MA-860 and the **antennas are connected directly to the MA-860 module.**

4.6.1 MA-860 RC 2000 Assembly

1. Assemble two side brackets to the plate sides as illustrated in Figure 4-6.
2. Assemble the MA-860 module to the supplied bracket using the four screws and washers as illustrated below.

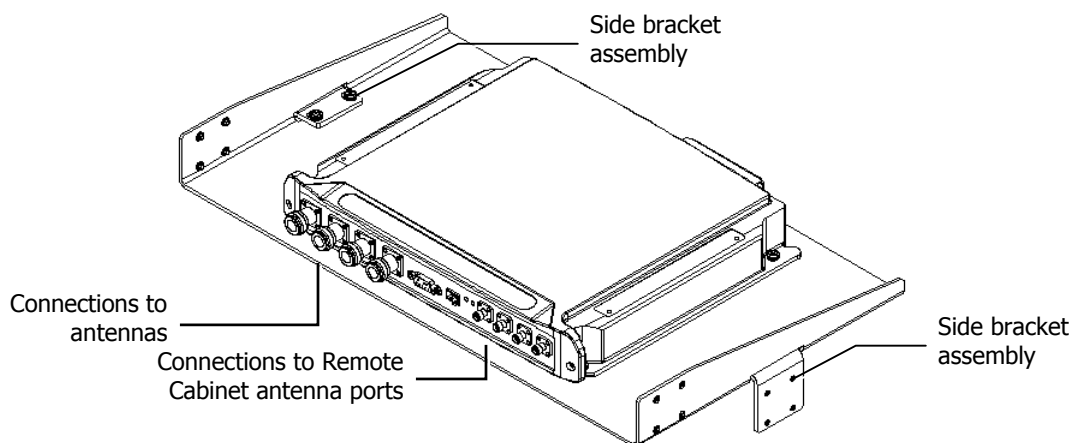


Figure 4-6. MA-860 Rack Installation

3. Assemble the plate to the MA 2000 RC by securing the brackets to the cabinet sides as illustrated below.

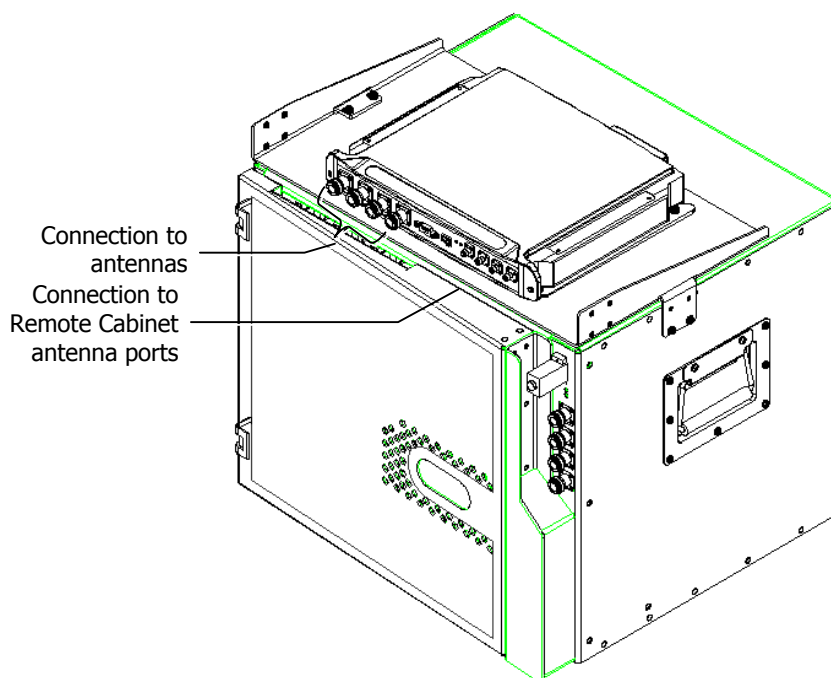


Figure 4-7. Illustration of MA-860 Mounted on MA 2000 RC

4. Connect the RC antenna ports to the MA-860 front panel port connectors as illustrated below.

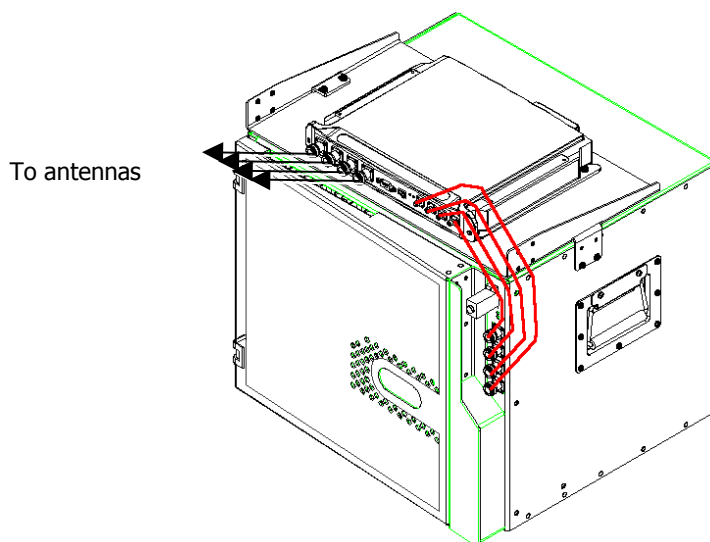


Figure 4-8. Illustration of RC Antenna port connections

5. Connect the antennas to the **MA-860 antenna ports**.

4.6.2 MA-860 Rack Mount

1. Assemble the side brackets as illustrated in Figure 4-6.
2. Assemble the MA-860 module to the supplied bracket using the four screws and washers.
3. Mount the assembly in the rack using the side brackets.

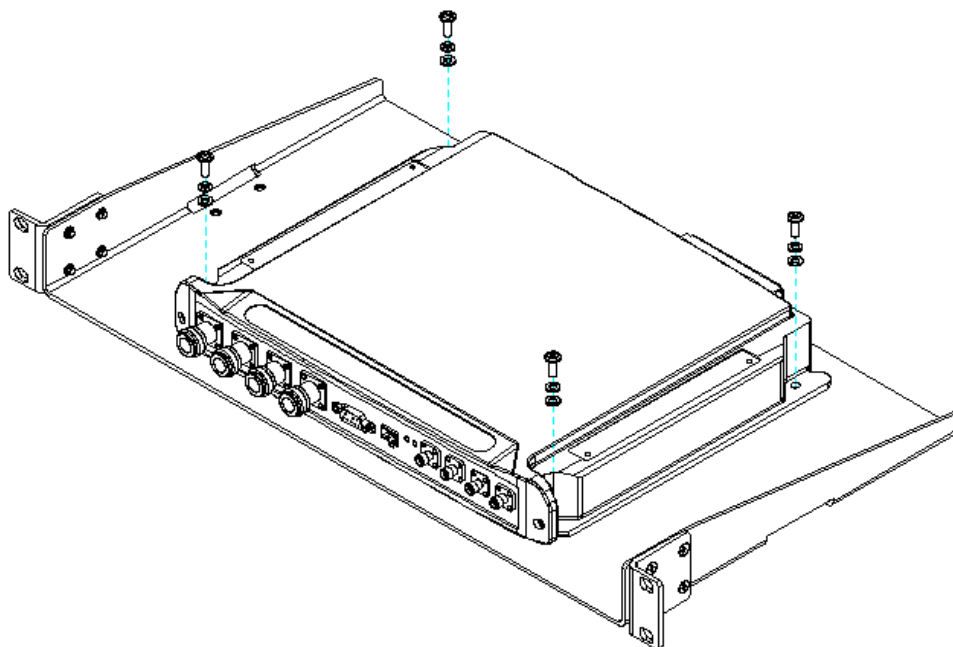


Figure 4-9. MA-860 to Bracket Installation

4. Connect the RC antenna ports to the SMA connectors on the MA-860 front panel.
5. Connect the antenna to the **MA-860** antenna ports.

4.6.3 MA-860 Wall Mount Installation

The MA-860 may be mounted independently on the wall near the RC cabinet.

- Connect the RC antenna ports to the SMA connectors on the MA-860 front panel.
- Connect the antenna to the **MA-860** antenna ports.

5

Power-up and Provisioning the Unit

Upon power-up, MA-860 automatically performs antenna auto-discovery. It is then required to perform a simple provisioning procedure via a local RS232 connection to a computer (laptop) running the MA-860 Configuration Tool application.

Once MA-860 is provisioned, it can be remotely managed via a Web access connection.

5.1 Power-up and Antenna Auto-discovery

To power-up the unit

Connect the power to the PWR connector located on the MA-860 rear panel.

Unit initialization and auto-discovery

Upon power-up, the unit performs discovery of antennas during which time the RUN LED (located on the front panel) is constant GREEN. *This will take between one to two minutes.*

After the initial discovery procedure has been completed, the RUN LED continuously flickers green indicating *normal* operation.

Note 1: Configuration changes (adding or removing) antennas can be discovered at a later stage can be detected remotely via the Web browser application using the auto-discovery command.[MP11]

NOTE 2: A local connection has priority over a WEB connection. A WEB connection will not be operational if there already is a local connection and the unit stop responding if a local connection is initiated while a WEB session is open.

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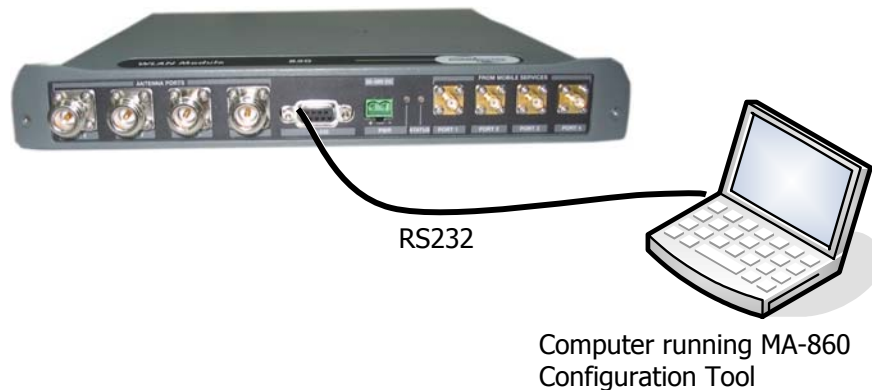
5.2 Local Provisioning

This procedure is performed via a local connection to a computer running the **MA-860 Configuration Tool** application.

To access the MA-860 control unit using the Configuration Tool

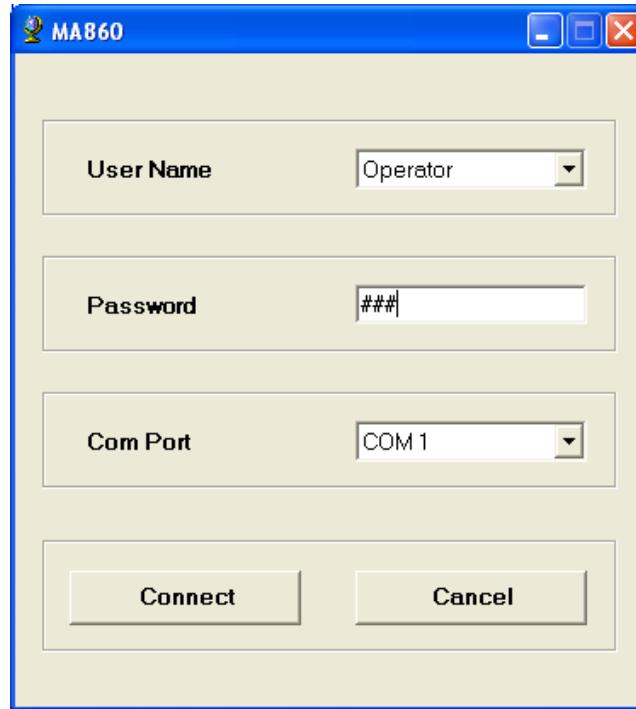
1. Install the **MA-860 MA Configuration Tool** application on your computer.
2. Connect to the MA-860 front panel **Local** connector using the RS232 9-pin cable provided with the MA-860 unit.

Note: Before connecting the MA-860 Configuration Tool, verify that the RUN LED flickers green, indicating that the antenna discovery process is complete (duration of one or two minutes after power is applied to the unit). Otherwise, a Communication Error may be displayed. If that happens, wait a minute or two for the discovery to be completed.



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3. Launch the MA-860 Configuration Tool application on the computer. The login dialog is invoked.



4. Select **Engineer** or Tech Support, and enter the corresponding **Password**.
5. Select the **COM Port** corresponding to the physical COM port on the computer to which the unit is connected.
6. Click **Connect**. The MA-860 Configuration Tool dialog is described in the following section.
7. Under **Serial Port**, Select the **com** port corresponding to the currently connected computer RS232 port and click **Connect**. The dialog options are described in the following sections.

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5.2.1 MA-860 Configuration Tool Window Description

The MA-860 Configuration Tool window is invoked according to the instructions in the previous section. The window enables configuring and monitoring the MA-860 controller unit and active antennas. The window provides four tabs:

- General – displayed by default. This is a read-only tab that summarizes the HW and SW versions of the system and identification information of the system elements.
- Advanced – contains basic configuration and calibration options four identical groups of parameters corresponding to each link path. This tab also provides antenna discovery and MA-860 device reset options.
- Alarms – used to show the status (normal or faulty) of each port.
- TechSupport – two tabs for MA service personnel.

A description of each tab is given after the figure.

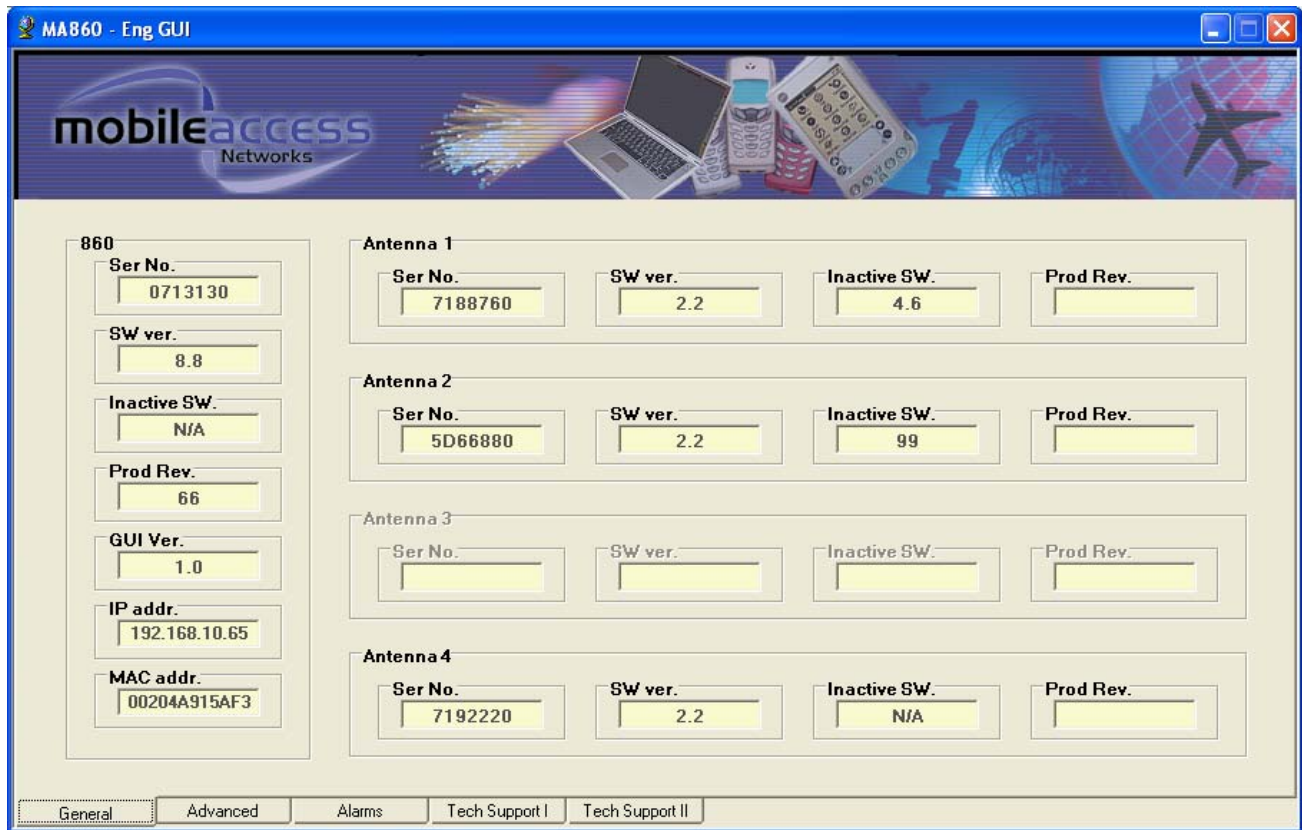


Figure 5-1. MA-860 Configuration Tool Main window

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5.2.2 Provisioning Procedure

Note: Refer to Figure 5-1 and Table 6-1 for the locations and descriptions of the parameters described in this section.

To provision the unit

1. Select the **Advanced** tab. The following window appears.

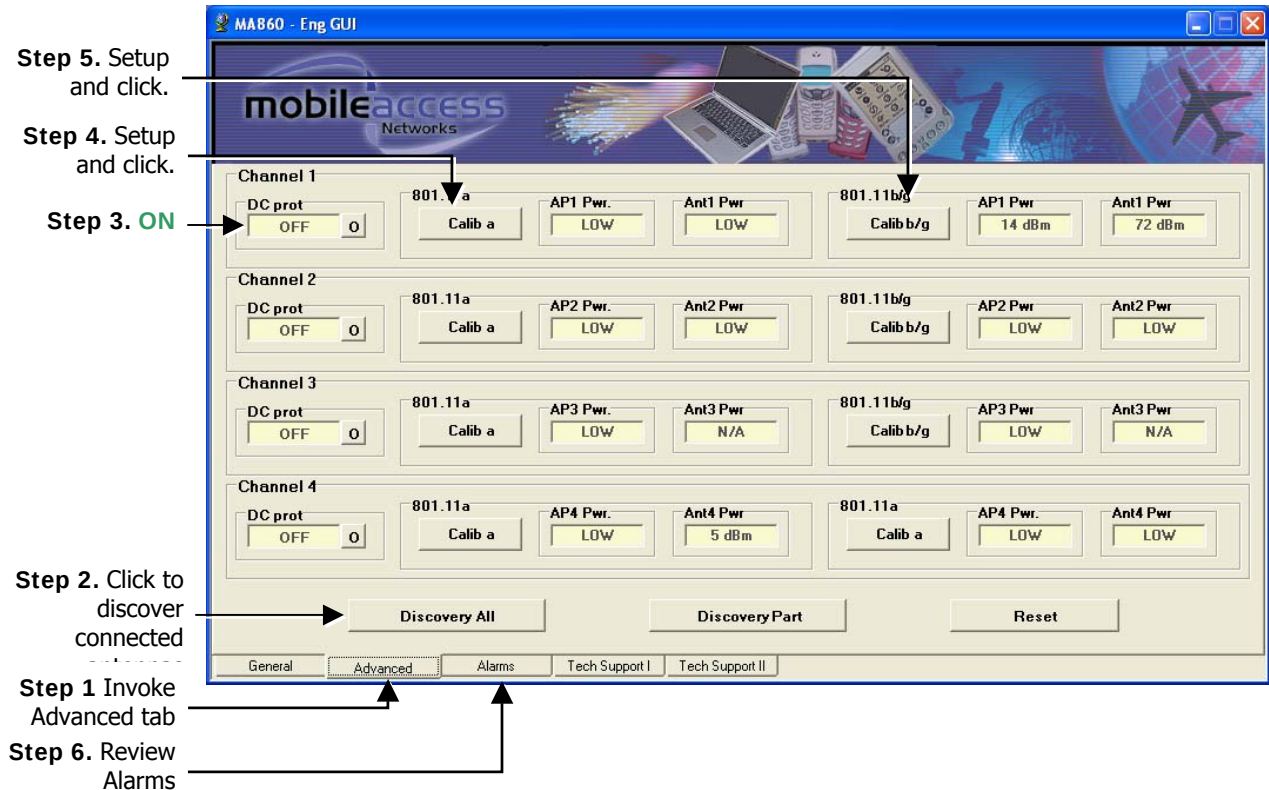


Figure 5-1. MA-860 Advanced Tab

2. Click the **Discovery All** button, to discover all the antennas.

Note: To discover changes from the last Discovery All operation, click the **Discovery Part** button.

3. In the **DC Prot** field of each channel to which an antenna is connected, verify that the **DC Prot** parameter is **ON**.

Note: If **OFF** is displayed in RED, it indicates the antenna is disconnected by the system (due to a detected fault such as a short.)

4. Perform **802.11a** cable adjustments as follows:
 - Set up a Constant Wave signal generator to **5.745GHz** at **17dBm** (for optimum results).

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Note: If the signal generator cannot be set to 17dBm, any level between 5 to 19 dBm range will achieve good results.

- Click the corresponding **Calib a**. The adjustment status will be indicated by the color of the button:
 - GREY – not adjusted or waiting for connection. Try again.
 - YELLOW – adjustment in process.
 - GREEN – successful adjustment.
 - RED – adjustment failure. Try again.
 - Repeat for each link (i.e. four times).
 - Verify that **AP1..4 .11a** (under **AP**) are equal to **Pwr 11.a** of the corresponding antenna.
5. Perform cable adjustments for **802.11bg** as follows:
- Set up a Constant Wave signal generator to **2.447GHZ** at **17dBm** (for optimum results).

Note: If the signal generator cannot be set to 17dBm, any level between 5 to 19 dBm range will achieve good results.

- Click the corresponding **Calib bg**. The adjustment status will be indicated by the color of the button:
 - GREY – not adjusted or waiting for connection. Try again.
 - YELLOW – adjustment in process.
 - GREEN – successful adjustment.
 - RED – adjustment failure. Try again.
 - Repeat for each link (i.e. four times).
 - Verify that **AP1..4 .11bg** (under **AP**) are equal to **Pwr 11.bg** of the corresponding antenna.
6. Click the **Alarms** tab. Referring to the following section (5.5).
- Disable (filter out) irrelevant alarms (where antennas or APs are not connected).
 - Verify that the connected Access Point and antenna indicators are Green.
 - Verify that the calibration indicators are Green.



To disable trap monitoring of irrelevant channels

For irrelevant channel, disable the **Trap Select** field.

Status color codes

Each status is color codes as follows:

- Green - OK
- RED - Fail
- GREY - Option disabled (i.e. Antenna Protect in the example below)

Trap descriptions

Trap	Description
Temp	
AP.11a	Connection status of 802.11a Access Points.
AP.11bg	Connection status of AP 802.11bg Access Points.
Ant Connect	Discovered antennas.
Ant Prot	Ant Protection Status[MP12]
Calib.11a	Calibration status of the corresponding cable adjustment procedure.
Calib.11b/g	Calibration status of the corresponding cable adjustment procedure.
MA-860	Last row in the window. Shows the operational status of the MA-860 unit.

5.2.3 What next?

The unit is factory set for DHCP. It can now be remotely accessed for any additional configuration procedures or for monitoring by entering the DHCP assigned address from any Web browser. Refer to section[MP13]

Note: For networks without DHCP – Assigning a Static IP Address, according to page 50.

5.3 Remote Web Management

NOTE: Be sure that there is not an open local session (section Error! Reference source not found.) to the MA 850A unit before you attempt to open a remote session to the same unit; otherwise, the unit may stop responding.

MA 850A whose SNMP parameters are defined may be connected to the network through an Ethernet connection and assigned addresses either through DHCP (default setting) or static address assignment methods. The MA 850A units may then be remotely managed from any Web Browser by connecting to the IP Address of the specific MA 850A unit or through any Network Operating Center (NOC) using SNMP.

Use the Remote Web management options to make configuration changes and to monitor the unit status.

5.3.1 Login and User Levels

You may login to the MA 850A unit through any Web browser. The user levels are available:

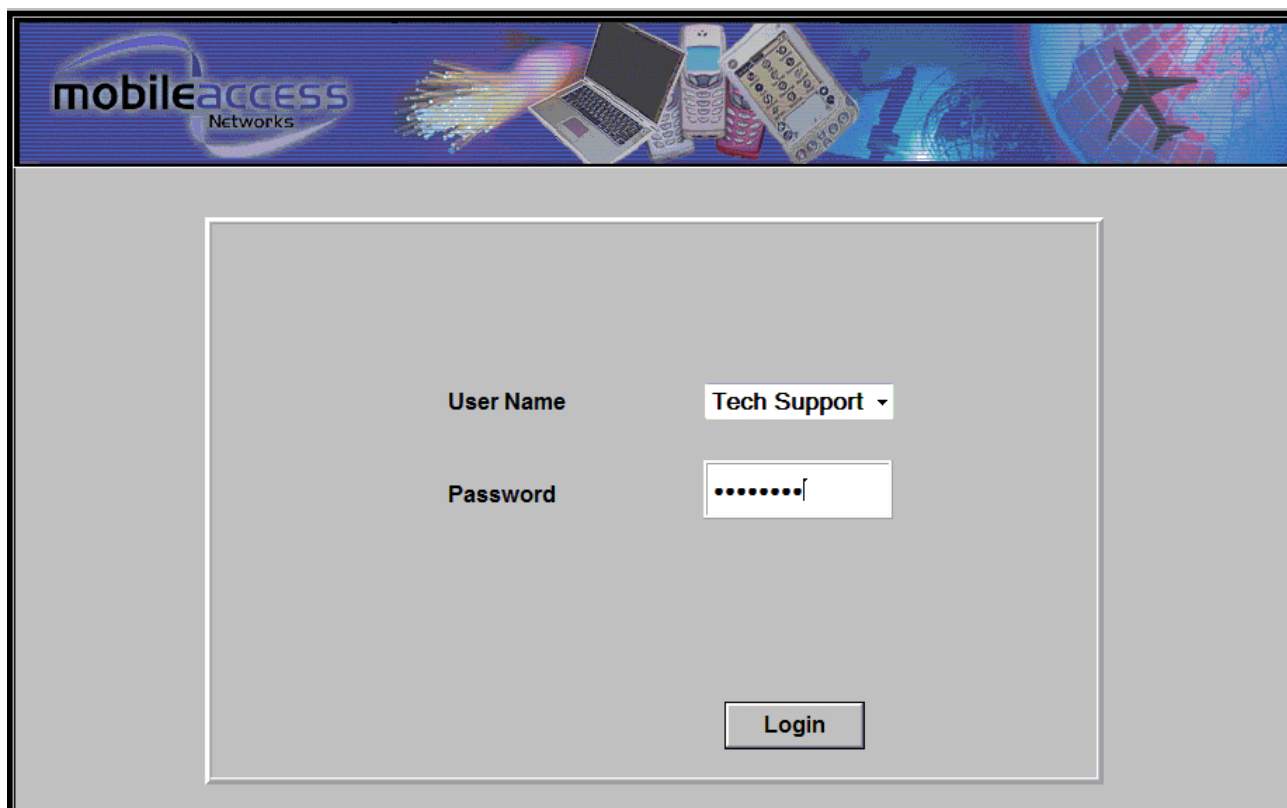
- **guest (guestpass)** – monitoring options only
- **admin (adminpass)** – monitoring and configuration options
- **TechSupport** – for MA technical personnel only

NOTE: The password is **case** sensitive – use **lower case** letters.

To login to the MA 850A configuration application

1. Run a Web Browser application (i.e. Internet Explorer).
2. Enter the IP Address of the MA 850A unit. (i.e. **http://192.168.10.127**). The Login dialog appears. The application version is displayed at the top of the window.

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mobileaccess
Networks

User Name Tech Support ▾

Password|

Login

Figure 5-2. Login Window

3. Select the User (**guest** or **admin**) and the password; where **admin** has configuration privileges.
4. Click **Login**. The Main configuration window appears. The window shows the current configuration (**Active Configuration**) and provides access to configuration and monitoring options. The Main window is described in the following section.

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5.3.2 MA 850A View

Upon login, the MA 850A View shows the current 802.11b/gs AP and antenna connections.

Menu options on the left side provide access to various configuration options as described in Table 5-2. Element color indications is described in Table 5-3.

NOTE: The display is refreshed automatically; however, if necessary, be sure to use the **application Refresh** button in the menu options (and **not** the Web Browser refresh).

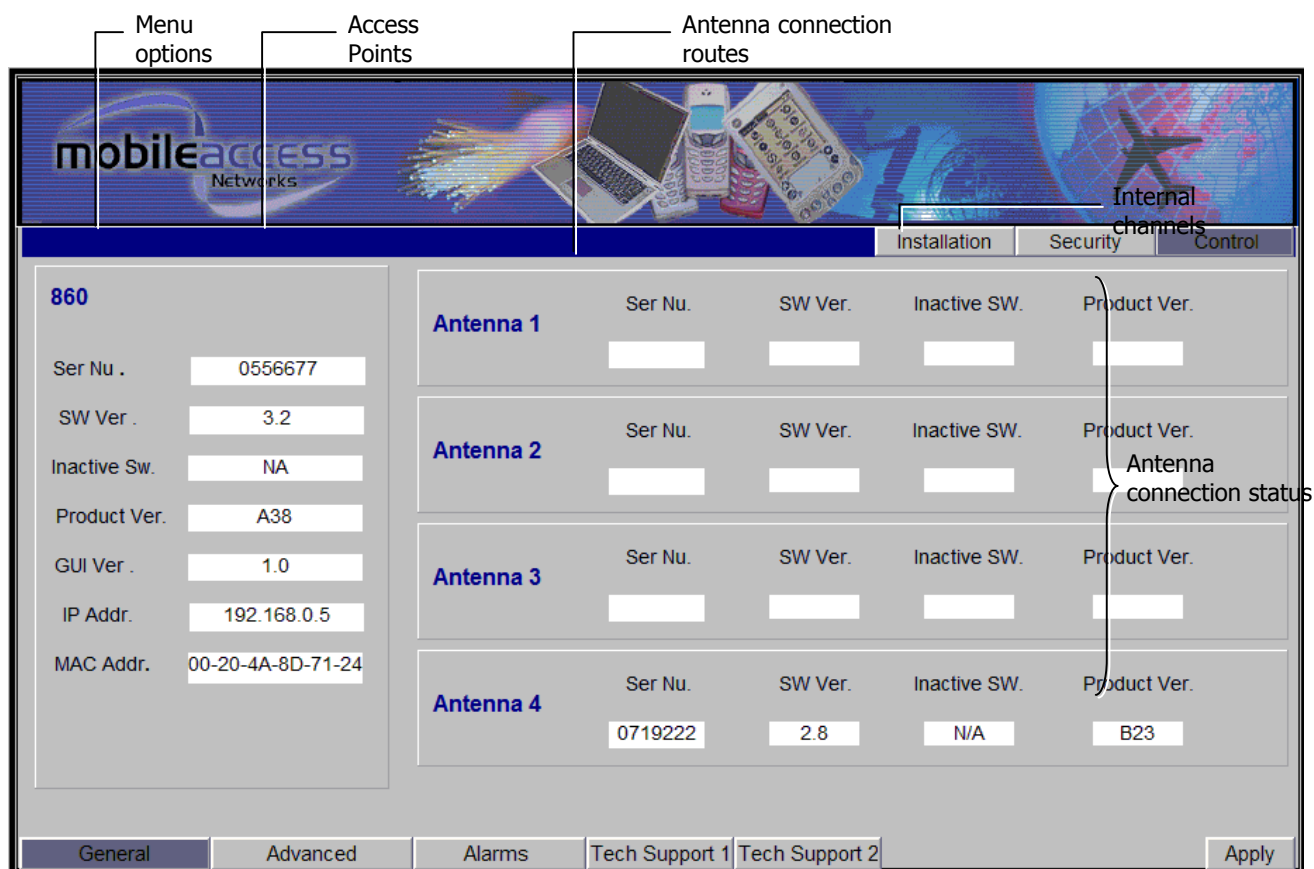


Figure 5-3. Main Window

Table 5-2. MA 850A View Menu Options

Menu Option	Description
Login/Logout	Click to login using a different user level
Active config	Displays the current configuration
Alarms	Alarm monitoring
Refresh	Used to refresh the display.
Setting	Gain setting (default = 0) and Redundancy enable/disable

	options
--	---------

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Table 5-3. MA 850A View Color Indications

Option	Description
Green	OK
Red	Error indication: Red AP – an AP is not connected or faulty. Red antenna – antenna not detected by antenna sense mechanism Red Amp – channel malfunction identified in the MA 850A unit
Purple	Location (not status) of backup AP in one-AP or two-AP configurations with in which the redundancy option is enabled. Only if the backup AP is activated (upon failure of a default AP), does its color indicate status (green, red).
Gray	Not relevant in current configuration – whether an AP is physically connected to the specific port or not.

5.4 Gain Setting

The default gain for each channel is set to 0dB. MA 850A enables the authorized user (**admin** level) to adjust the gain for every channel to counteract changes in the environment.

For example, you may want to reduce the coverage area of a channel to prevent interference. Or, the output of an AP with a low power (<20dBm) can be increased using the gain value.

To change the gain setting of a channel

1. Click the **Setting** button in the Main window. The Gain Setting options appear.

mobileaccess Networks

Gain Setting options

Installation Security Control

Channel	DC prot	Frequency	AP Pwr	Ant Pwr	Gain Value
Channel 1	OFF	802.11a	low	N/A	
Channel 2	OFF	802.11a	low	N/A	
Channel 3	OFF	802.11a	-14	N/A	
Channel 4	ON	802.11a	low	19	168

Discovery All Discovery Part Reset

General Advanced Alarms Tech Support 1 Tech Support 2 Apply

Figure 5-4. Gain Setting Options

- For the relevant channel, change the gain. Range = -10 to +5 dB
- Click **Accept**. The gain value for the channels at the unit is displayed under the **Gain Value** column.

5.5 Monitoring Alarms

MA 850A provides the following alarms, which may be viewed by clicking the **Alarms** button in the Main window:

- Access Point Sense** – senses the connection of configured APs
- Low power** – internal channel operation status
- Antenna sense** – senses connected antennas. This option can be disabled for antennas that are not connected

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InstallationSecurityControl

	Trap Select	Temp	AP .11a	AP.11b/g	ANT Connect	ANT Prot	Adjust.11a	Adjust.11b/g
Channel 1	☒	☐	☐	☐	☐	☐	☐	☐
Channel 2	☒	☐	☐	☐	☐	☐	☐	☐
Channel 3	☒	☐	☐	☐	☐	☐	☐	☐
Channel 4	☒	☐	☐	☐	☐	☐	☐	☐
MA-860	☒	☐						

GeneralAdvancedAlarmsTech Support 1Tech Support 2

Apply

Figure 5-5. Alarms Window

Appendix

6.1.1 Advanced Tab Parameters

This tab is used to:

- Configure the antennas manually and perform auto-discovery of antennas
- Perform cable adjustment for each channel
- View the power level at each antenna port and at each AP port
- Reset the MA-860 unit



Table 6-1. MA-860 Configuration Tool Window Parameter Descriptions

Window Item	Description
DC Protection	Used to show and configure status of voltage at each antenna port. Voltage is automatically disabled (Off) to a port where an antenna was not detected during auto-discovery (upon power-up and upon command from the user). The button adjacent to each DC Prot field is used to manually disable or enable voltage to the corresponding antenna (relevant for service personnel under conditions where an antenna is disconnected or replaced). Note: A label will be colored RED if the corresponding antenna was disconnected by the unit (i.e. due to a short in the antenna).

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Window Item	Description
Calib a/bg	Used to perform cable adjustment for 802.11a and 802.11b/g services. <i>Note: this is a required configuration procedure.</i> The color of the buttons indicate the status of the corresponding adjustment procedure: Black – adjustment not initiated or communication error during the adjustment. Yellow – adjustment in process Green – successful adjustment Red – failed adjustment
Antenna Power	Power supplied to the antenna[MP14]
General area	Curr Ant 1..4 – the current value indicates whether the corresponding antenna is operating normally.
AP Power	AP1..4 .11a – shows the 802.11a service power provided by the corresponding (1 to 4) AP. <i>Note: During normal operation, this value should be equal to the power transmitted by the relevant antenna (parameter Pwr 11.a of the corresponding antenna*).</i> AP1..4 .11b/g – shows the 802.11b/g service power provided by the corresponding (1 to 4) AP. <i>Note: During normal operation, this value should be equal to the power transmitted by the relevant antenna (parameter Pwr 11.b/g of the corresponding antenna*).</i>
Antenna 1..4	Four window areas corresponding to each antenna. <i>Only the areas of antennas detected during auto-discovery (automatically performed when power is connected) are accessible.</i> Each area contains the following parameters: - o Pwr .11a – 802.11a service power measured at antenna output. Should be the same as the 802.11a service power output by the corresponding AP (AP .11a under AP Pwr). - o Pwr .11bg – 802.11b/g service power measured at antenna output. Should be the same as the 802.11b/g service power output by the corresponding AP (AP .11b/g under AP Pwr) *. - o AP a DCA – Digital Control Attenuator for 802.11a Tx/Rx antenna Gains. Used to manually attenuate (reduce) the signal under special conditions of Cable Adjustment failure. <i>The greater the DCA value, the smaller the signal.</i> - o AP bg DCA – Digital Control Attenuator for 802.11b/g Tx/Rx antenna Gains. Used to manually attenuate (reduce) the signal under special conditions of Cable Adjustment failure. <i>The greater the DCA value, the smaller the signal.</i> - o N/Tx 11a – power level of 802.11a signal transmitted by the antenna. Should be preset to "Normal" mode (Tx mode is used only for factory testing). - o 5V .11a – input voltage for the TDD Amplifier of 802.11b/g - o 5V .11bg – input voltage for the TDD Amplifier of 802.11b/g (normal values are 4-5V) - o 3V – input voltage level for 802.11a Rx - o 6V – Antenna Input DC Power - o 3.3V – Digital Control voltage level

*This is relevant only AFTER the adjustmet procedure is performed.

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6.1.1.1

6.1.1.2 Tech Support Tab for MA Service Personnel

There are two Tech Support tabs designated for maintenance procedures for MA service personnel:

- TechSupport I – displays antenna current and voltage values and provides options for resetting the power dedector.



6.1.2 IP Configuration Procedure

MA 850A units connected to the network may be assigned either dynamic IP Addresses through DHCP or static IP addresses (for networks without DHCP). The addresses may be assigned from a single location using the **Lantronix DeviceInstall** application supplied with the units.

The IP configuration procedure consists of the following steps:

- Installing and launching the **Lantronix DeviceInstaller** application on your computer.
- Connecting to the Network, page 49
- Performing Auto-Discovery, page 49
- For networks without DHCP – Assigning a Static IP Address, page 50
- Configuring the SNMP Parameters, page 54

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6.1.2.1 Connecting to the Network

Connect each MA 850A unit *first* to the *network* and *then* to the power cable.

NOTE: It is recommended to record the location of the units according to the MAC addresses on the sticker at the rear of the units near the Ethernet port.

6.1.2.2 Performing Auto-Discovery

NOTE: Be sure the installed version is 3.6 or higher.

1. Install and launch the **Lantronix DeviceInstaller** application on your computer.

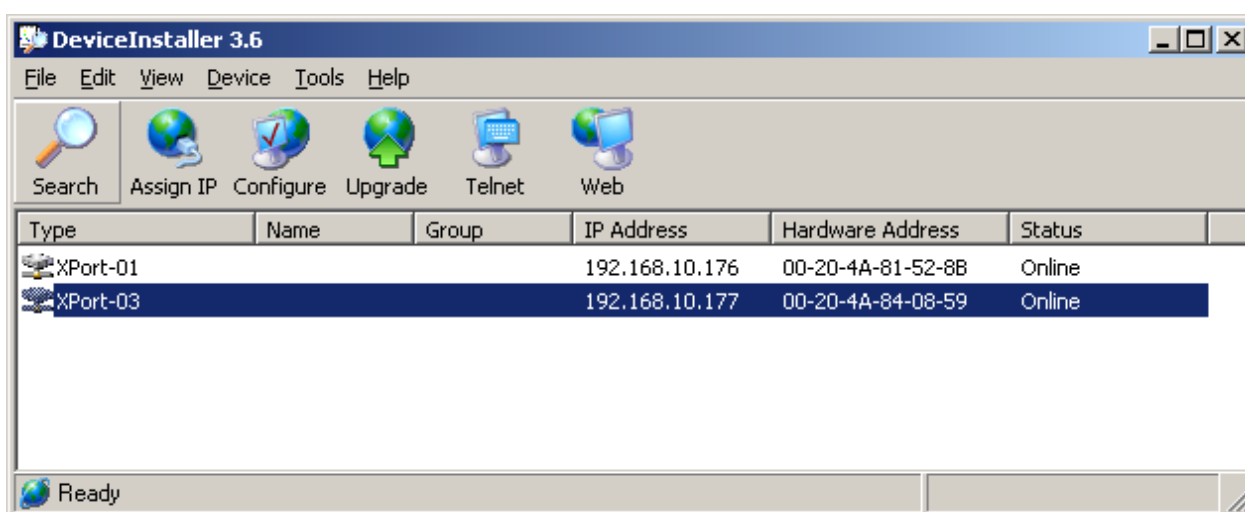


Figure 6-1. DeviceInstaller dialog

2. In the **DeviceInstaller** main window toolbar, click **Search** to perform auto-discovery. The MA 850A units currently in the network will be identified and listed in the window according to:
 - **Type** - communication hardware version - **xPort-01** or **xPort-03**
 - **Hardware Address** – MAC address
 - Additional identification parameters that may be available
3. For networks with DHCP:
 - The dynamically assigned IP Address will also be listed in the **IP Address** column.
4. For networks without DHCP:
 - Disregard the data displayed in the **IP Address** column and assign a Static IP address according to Assigning a Static IP Address, page 50.

What next ?

Define the SNMP parameters according to Configuring the SNMP Parameters, page 54.

6.1.2.3 Assigning a Static IP Address

NOTE: This procedure requires the MAC address of the MA 850A, which is found on the label located at the rear of the unit.

Perform the following procedure for each of the MA 850A units listed in the Lantronix DeviceInstaller main window which are to be manually assigned IP Addresses.

1. Select the MA 850A unit and click the icon **Assign IP** in the toolbar.

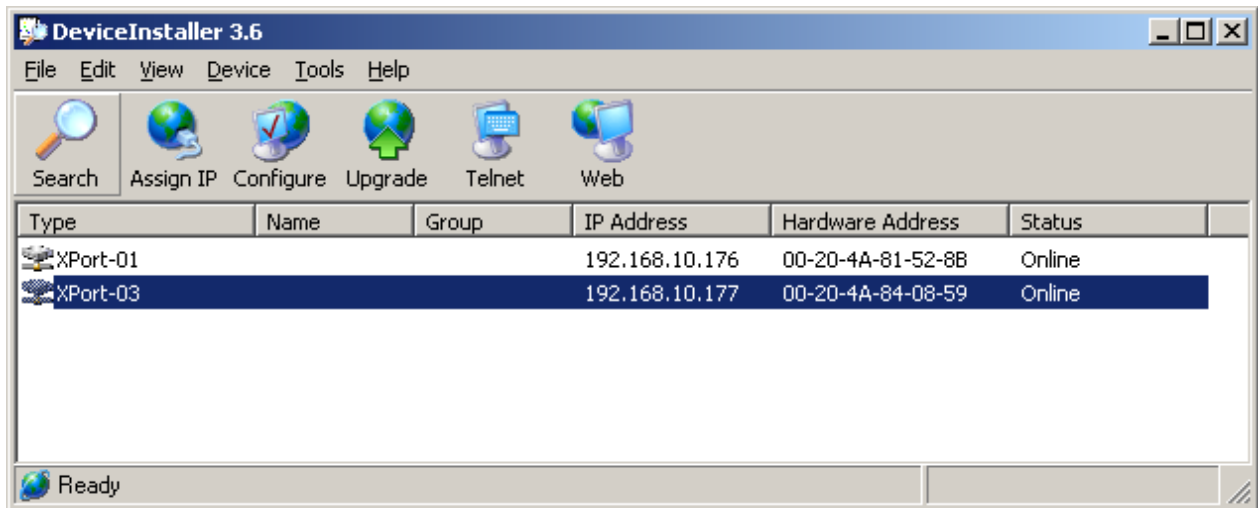


Figure 6-2. Assigning Static IP Address

The Device Identification window appears, showing the MAC address of the selected MA 850A unit.

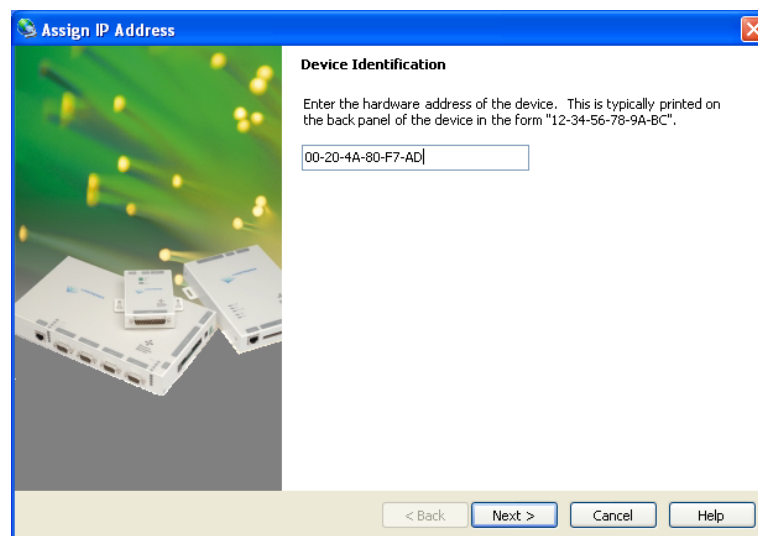


Figure 6-3. MAC Address

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2. Click **Next**. The IP Address Assignment Method window appears.

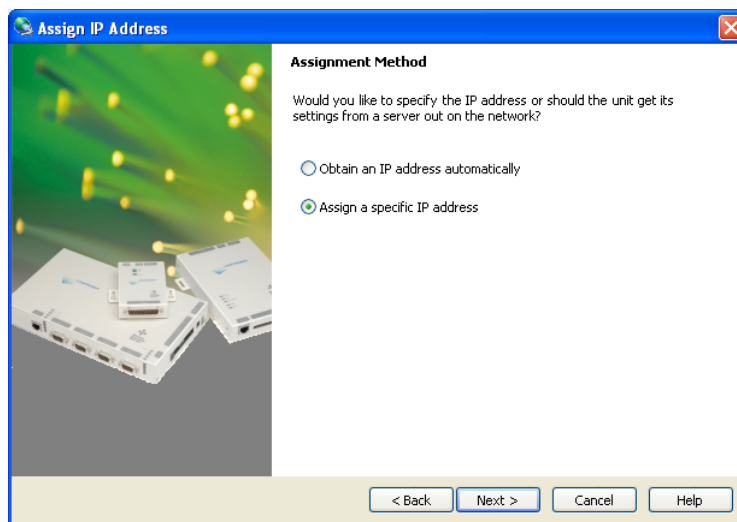


Figure 6-4. Static IP Address

3. Select **Assign a specific IP address**; then, click **Next**. The IP Settings window appears.

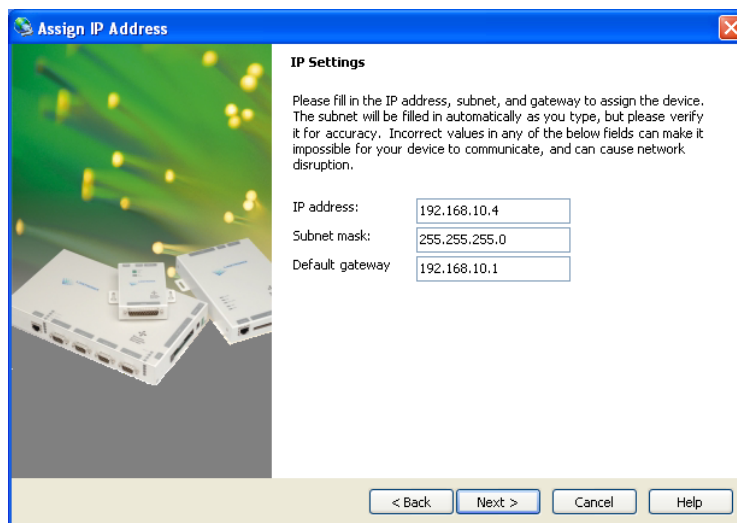


Figure 6-5. Static IP Address Definition

4. Enter the **IP Address**, **Subnet Mask** and **Default Gateway** values; then, click **Next**. The Assignment window appears.

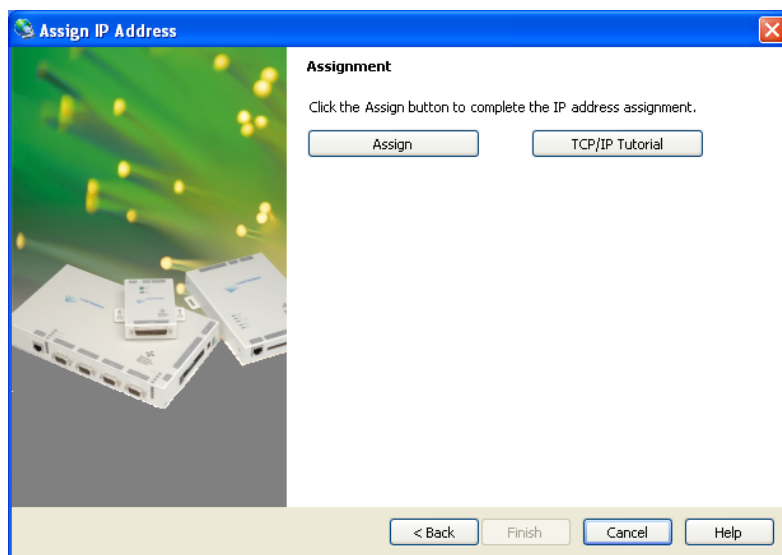


Figure 6-6. Assignment Window

5. Click **Assign** to assign the MA 850A unit the defined parameters.
Once the parameters have been assigned, the message 'Completed Successfully' appears and the **Finish** button is enabled.

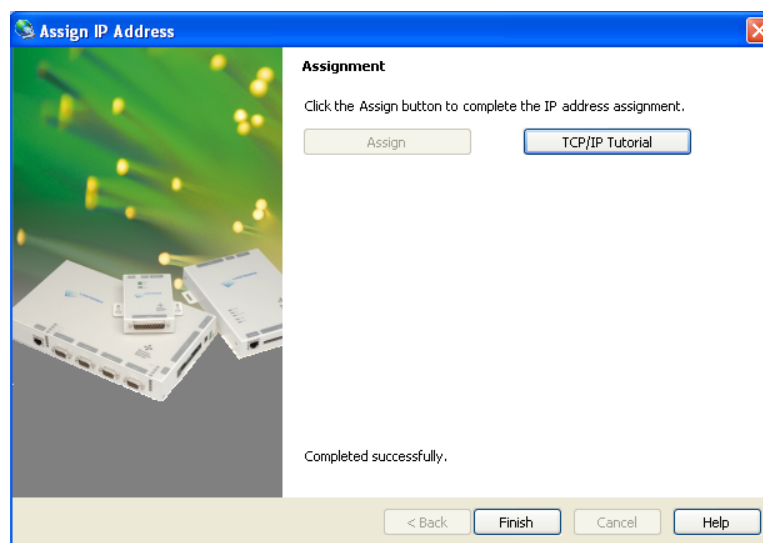


Figure 6-7. Finish Static IP Address Definition

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- Click **Finish**. The **Device Installer** Main window reappears and the installed unit will be listed in the window.

What next?

Define the SNMP parameters according to Configuring the SNMP Parameters, page 54.

6.1.2.4 Configuring the SNMP Parameters

Configure the SNMP Community and Trap destination addresses according to the instructions in this section.

NOTE: The required communication parameters are pre-set for each MA 850A unit. However if you do not succeed in connecting to the Telnet application, verify the serial communication parameter page 55 section 6.1.3

- Select the MA 850A unit which will be configured (may be identified according to its MAC address value) and click the **Telnet** button in the toolbar.

The Telnet dialog shows the IP address of the currently connected MA 850A unit.

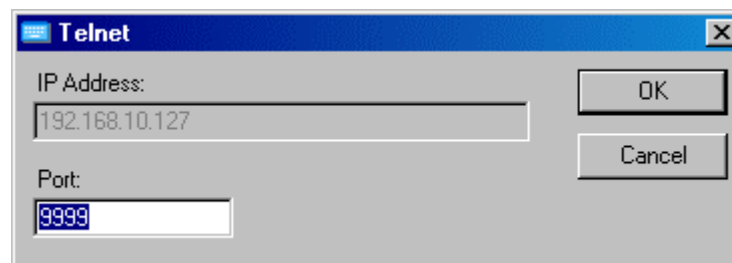


Figure 6-8. Telnet IP Address window

- Click **OK** and immediately press **Enter** to go into Setup Mode. The current settings will be displayed, followed by the **Change Setup** menu.

Change Setup:

```

0 Server configuration
1 Channel 1 configuration
3 SNMP configuration
7 factory defaults (for manufacturer use only DO NOT
  SELECT!!)
8 exit without save
9 save and exit
Your choice ?

```

- Enter **3** (SNMP Configuration).

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- Set the SNMP Read and Write community names and the SNMP traps destination addresses (up to three addresses can be defined) by responding with **Y** to the prompt **Set the Gateway IP Address** and defining the Address (as illustrated below).

```
SNMP community name for read (): public
SNMP community name for write (): private
Enter IP addresses for SNMP traps:
  1: (000) 192.(000) 168.(000) 10.(000) 22
  2: (000) .(000) .(000) .(000)
  3: (000) .(000) .(000) .(000)
```

- Press **Enter** to run through the rest of the parameters. When the Setup Menu is displayed again, select **9 – Save and Exit**.

6.1.3 Configuring Serial Parameters

This section describes how to verify and configure the serial communication parameters for each MA 850A unit.

- From the **DeviceInstaller** Main window, select the MA 850A unit to be configured and click the **Configure** button the toolbar. The Configure Device dialog appears.

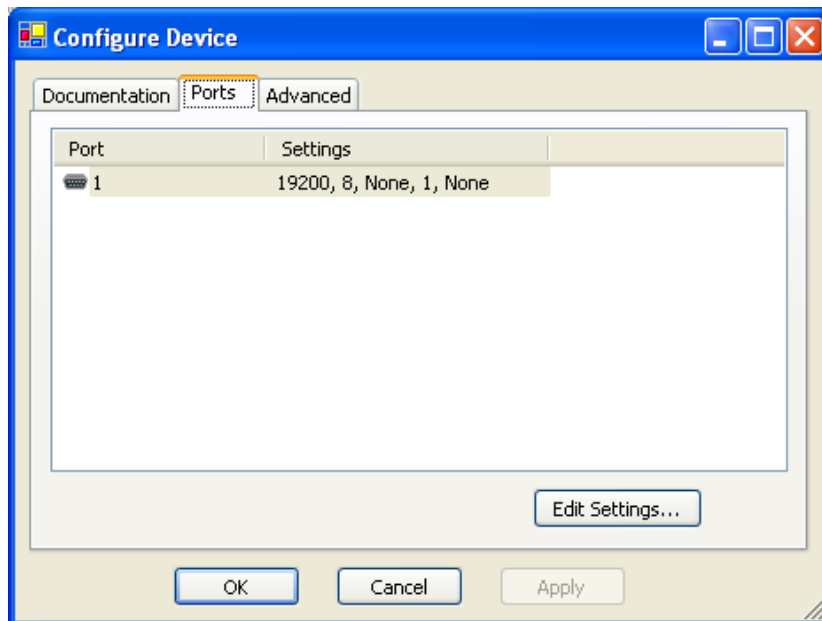


Figure 6-9. Current Serial Port Parameters

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2. Click the **Ports** tab and then the **Edit Settings...** button. The Port Properties dialog appears.

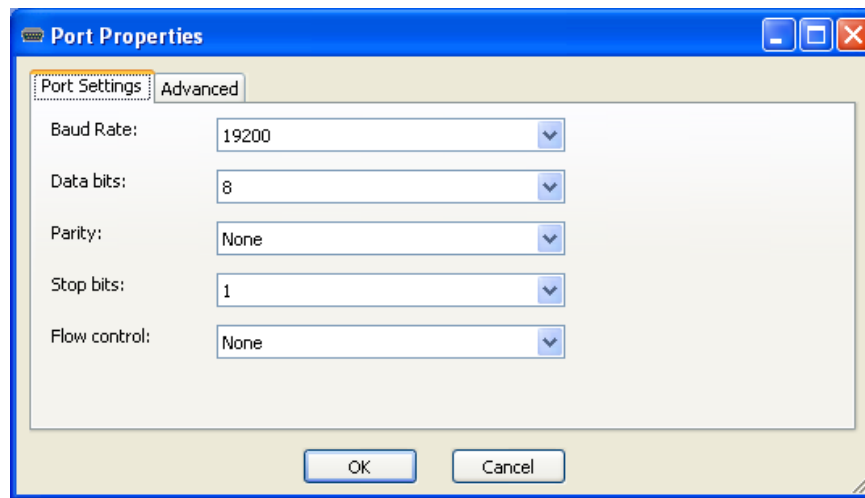


Figure 6-10. Port Properties

3. Set the parameters as follows: Baud Rate 19200, Data Bits 8, Parity None, Stop Bits 1, Flow Control None; then, click **OK**. The DeviceInstaller Main window appears.

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