Advance**Mobile**™
QC1

Installation &
User Manual

Part # AT3557A

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Optional Extra Accessories

Specifications

The AdvanceTec AdvanceMobile™ QC1 is designed to provide secure and convenient communication in the vehicle, on the SPRINT Direct Connect (PTT) network.

The AdvanceMobile™ QC1 consists of:
1. Part # AT8261A   Junction Box
2. Part # AT8231A   Speaker
3. Part # AT8230A   Visor Microphone (Visor Mic.)
4. Part # AT9299B   Push-to-Talk (PTT)
4. Part # AT8232A   Power cable
5. Part # AT8422A   Antenna Magnet Mount
6. Part # AT3512A   AdvanceMobile™ QC1 Control Module

Optional Extras
1. Part # AT8428A   Palm Microphone
2. Part #AT7107A   Privacy Handset with cradle

! Note
A properly installed AdvanceMobile™ QC1 will minimize service calls and equip-ment downtime. Because of the wide variations in vehicle design, these instructions should be modified to suit each particular installation.

Before beginning the installation process, determine the locations for the mounting of the Visor Microphone, Speaker, Junction Box, PTT, and Magnetic Mount Antenna.

Consider the following guidelines when planning the installation:
> DO use all mounting hardware provided.
> DO ensure that cables are not placed under stress.
> DO follow proper + and - connections.
> DO crimp connectors securely.
> DO NOT attach components to any part of the vehicle that is not rigid or is subject to excessive vibration.
> DO NOT install components in areas where rain or snow can easily get into them, such as next to a vehicle window, which may be left open.
> DO NOT dress cables over sharp edges that could cause wear or tearing of cable insulation.
> DO NOT install components in locations where they might interfere with the vehicle operator or operating controls.
> DO NOT install the PTT where it will be difficult for the operator to reach.

VEHICLES EQUIPPED WITH AIR BAGS
An air bag inflates with great force. DO NOT place objects, including communications equipment, in the area over the air bag or in the air bag deployment area. If the communication equipment is improperly installed and the air bag inflates, this could cause serious injury.

It is recommended that the installation of the vehicle communication equipment be performed by a professional installer/technician trained in the requirements for such installations. An air bag's size, shape and deployment area can vary by vehicle make, model, and front compartment configuration (for example, bench seat vs. bucket seats). Contact the vehicle manufacturer's corporate headquarters, if necessary, for specific air bag information for the vehicle make, model, and front compartment configuration involved in your communication equipment installation.

! WARNING

VEHICLES WITH ANTI-SKID BRAKING SYSTEMS
For vehicles with electronic anti-skid braking systems, refer to the "Anti-Skid Braking Precautions," Motorola publication 68P81109E34. This publication can be ordered from Motorola® Worldwide Systems and Aftermarket Parts Department.

Operating the AdvanceMobile™ QC1

The AdvanceMobile™ QC1 will allow:

1. Direct Connect (PTT) calls to be made to up to Twenty (20) pre-programmed Private Direct Connect (PTT) or Group numbers.
2. Direct Connect (PTT) calls to be received by the AdvanceMobile™ QC1.
Consult your AdvanceTec sales professional **for more information on this feature.**

Set up of the AdvanceMobile™ QC1

The AdvanceMobile™ QC1 requires activation onto the Sprint Direct Connect network. To connect to the Sprint Direct Connect network, contact your local Sprint sales office.

Installation of AdvanceMobile™ QC1

A. Speaker Installation
1. Mount the Speaker beneath the dashboard, on the passenger's side of the vehicle, out of the way of the passenger. Do not mount the Speaker on the dashboard or the rear window shelf.
2. The Speaker should be located more than four feet from the junction box.
3. The Speaker includes a mounting bracket, permitting it to be mounted in a variety of ways. Loosen the thumbscrews on the side of the speaker and using the mounting bracket as a template, drill the necessary mounting holes and secure the bracket with the self-tapping screws provided.
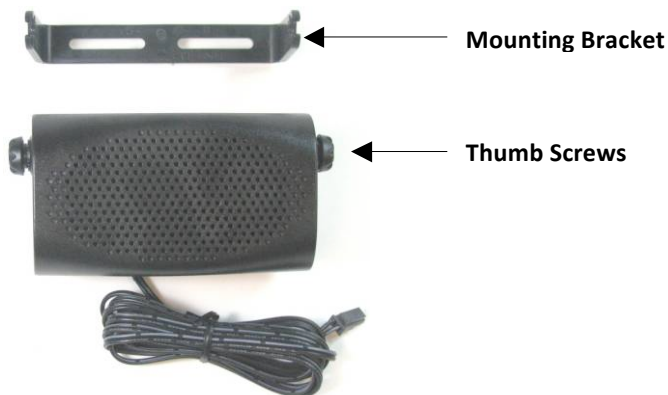

Mounting Bracket

Thumb Screws

Diagram 1

4. Position the Speaker on the mounting bracket and secure it by tightening the thumbscrews. The mounting bracket is used to permanently mount the Speaker in place while permitting it to be tilted to a desired angle.
5. Feed the cable out of sight to the location where you intend to mount the junction box.
6. The speaker should be located at least 3 ft (1m) from the visor microphone. Avoid placing the speaker where it faces the visor microphone.

B. Microphone Installation
1. The Microphone supplied has noise cancellation features and as such the selection of the correct position for the microphone is vital for the successful performance of the AdvanceMobile™ QC1
2. The Microphone should be mounted either on the sun visor directly above and facing the driver, or on the headliner just above and facing the driver.

Facing the driver

Diagram 2

3. The visor microphone has a noise canceling feature and must be mounted facing the driver as shown in the picture above.
4. To avoid visual or physical obstruction, route the microphone cable down inside the door molding. Allow sufficient slack on the connector end of the cable to reach the Junction Box.
5. Feed the cable to the location where you intend to mount the junction box.

Note! The microphone should not be mounted near a window or in a spot where road and ambient background noise would be substantially high (above 85dB SPL).

C. **Mounting of the PTT**

1. To attach the PTT to the gear lever, strap the PTT around the gear lever using the Velcro strip attached, with the cord facing down.

Velcro Strip

Flat Plastic

Diagram 2

2. To attach the PTT to a flat surface, remove the 2 screws from the bottom of the PTT, which holds the Velcro strip in place. Remove the strips and replace the small plastic part that held the strips in place with the larger flat plastic part supplied with the PTT. Screw the new plastic part in place.
3. Feed the cable out of sight to the location where you intend to mount the junction box.
Caution: Make sure there is sufficient slack in the cable to allow the free movement of the gear lever without stretching the PTT cable.

D. Installing the Power Cable
Caution: The AdvanceMobile™ QC1 should be used with a negative ground electrical system only. Reverse polarity (positive ground) will trigger protection circuits which cause the cable fuse to open. Check the ground polarity before you begin the installation to prevent wasted time and effort. 12V DC or 24V DC automotive systems are directly supported
Determine the best cable route to the vehicle ignition for the Power Cable from the location where you intend to mount the Junction Box.

Diagram 3

1. Route the black lead of the main power cable to a convenient chassis ground and the red lead to the positive supply voltage connection points. If it is necessary to penetrate the firewall, try to use an existing opening.
2. If there is no existing opening, drill a new hole approximately 9/16" or 3.5cm in diameter. Make sure that there is enough clearance on the opposite side. Insert a grommet into the hole to prevent damage to the power cable. When making connections on the engine side of the firewall, additional in-line fuse holder (included) should be used at the connection points.

(12VDC) ON/OFF (Ignition)
To Vehicle Radio Stereo MUTE
To Vehicle Ground System
To Vehicle Supply Voltage
In line Fuse

GREEN MUST GO TO IGNITION OR CONNECTED WITH RED

<u>Diagram 4</u>

3. Cut the black lead to the desired length.

4. If the connection is being made under the dash or in the vehicle cabin, connect the black lead directly to the chassis of the vehicle.

5. If the connection is being made in the engine compartment, connect the in-line fuse holder between the black lead of the power cable and the desired chassis connection point.

Note! Do not connect the black lead to the negative (-) battery terminal.
The AdvanceMobile™ QC1 could be damaged if there were a malfunction in the vehicle's electrical system.

6. Cut the red lead to the desired length. This lead will be connected such that it has positive supply voltage at all times, even when the vehicle is turned off.

7. If the connection is being made under the dash or in the vehicle cabin, connect the red lead to a positive supply voltage point.

8. If the connection is being made in the engine compartment or directly to the battery, connect the in-line fuse holder between the red lead of the power cable and the desired positive voltage connection point.

9. Route and connect the green lead to a convenient ignition switch supply point in the vehicle. <u>If the green lead is not being connected to the ignition, it MUST be connected together with the red lead.</u>

Note! An ignition switch accessory terminal can be verified by measuring the terminal while operating the vehicle's key switch. With the ignition key in the "accessory ON" position, the terminal voltage should measure the vehicle's battery voltage. With the switch in the "OFF" position, it should measure near zero

<u>Stereo Mute</u>
If the vehicle's stereo system supports an external muting feature, route and connect the orange wire to the car stereo system. Otherwise, the orange wire may be left unconnected and cut off or tied out of the way.

Note! The Car Kit supports an "Entertainment Mute" function when connected to a car stereo system that provides for external muting. This function is compatible with systems that mute the audio output when the control line is connected to ground

D. <u>Mounting the Vehicular Antenna</u>

1. Screw the antenna to the external magnetic (Mag) mount antenna base; both supplied with the AdvanceMobile™ QC1

2. Mount the Mag. Mount antenna or other external vehicular antenna (to be purchased separately if the supplied Mag. Mount Antenna does not fit your purposes).

NOTE! **For best performance use a low-loss coaxial cable with the highest gain antenna.**

3. Position the antenna, maintaining a separation distance of at least 8 inches (20 cms) between the antenna and the body of any user and nearby person, to assure compliance with the U. S. FCC regulations on RF exposure.

External Antenna

Diagram 5

4. Connect the antenna cable to the external antenna connector on the junction box. See Diagram below.
5. Feed the antenna cables out of sight to the location where you intend to mount the junction box.

Connecting cables to Junction Box.

1. Locate a position for the junction box beneath the dashboard on the passenger's side of the vehicle or on the center side post between the front seats. It must be protected from dirt and moisture and must be afforded adequate space for cooling. There must be sufficient space to allow for connection of all cabling.
2. DO NOT mount the junction box at this stage. Connect the Microphone, Speaker, Power cable and Control Module to their corresponding connections on the Junction Box as indicated in Diagram below.
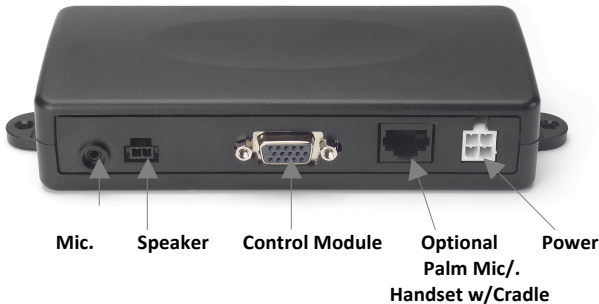
Mic.   Speaker   Control Module   Optional   Power
                                      Palm Mic/.
                               Handset w/Cradle

Diagram 6

3. Connect the coaxial antenna cable to the corresponding connector on the opposite side of the Junction Box.
4. After connecting the power cable's connector to the Junction Box,
cut in half the red wire attached to the fuse housing supplied. Cut the long red power lead to the desired length and connect (crimp) it to the one end of the wire to the fuse housing.
5. Connect the other end of the wire from the red fuse housing to the positive (+) side of the ignition. The fuse housing can be secured in place by using a plastic tie or screw through the hole in the fuse's plastic housing
6. Mount the junction box in place using the 2 mounting screws supplied.

Mounting
holes

Mounting
holes

Diagram 7

Registering the AdvanceMobile™ QC1 and Programming Numbers

1. Once the AdvanceMobile™ QC1 is powered, it will begin the registration process onto the Sprint Direct Connect Network. The initial registration can take up to 3 minutes.
2. Once the registration is successful, 5 short pulses will be heard through the speaker.
3. After registration, the phone numbers with which the AdvanceMobile™ QC1 will communicate must be loaded. This can be done manually or with the Utility software available from AdvanceTec, which will be loaded onto the

Control Module.

Manually loading numbers

1. Power ON the AdvanceMobile™ QC1 and initiate a Direct Connect (PTT) call to it from a phone with which you want the AdvanceMobile™ QC1 to communicate.
2. Select a channel on the Control Module
3. When the incoming call is heard on the speaker, press and hold down the programming switch using a pen refill or similar devise. (See Diagram 8 below) The PTT button and the programming button must both be kept depressed.
4. Successful programming of the number will be indicated by 5 short beeps through the speaker.
5. End the call by pressing the red END button.
6. Repeat this process until all the Direct Connect (PTT) numbers with which the AdvanceMobile™ QC1 will communicate have been loaded against the open channel numbers of the Control Module.

Diagram 8

NOTE! The Programming button and the Direct Connect (PTT) must be kept depressed until the programming has been successfully made and the beeps heard on the speaker.

Erasing numbers entered

1. To erase a number entered, power the unit and then select the channel you want to erase on the Control Module
2. Press and hold down the programming switch as indicated above until 5 short beeps are heard on the speaker which will indicate the successful

erasing of that number

Erasing all numbers entered

1. To erase all the numbers entered, with out power to the unit, press and hold down the programming switch as indicated above and then attach the power cable.
2. Keep the programming switch pressed down until a long beep is heard through the speaker. Keep the programming switched pressed down for a further 2 seconds until 5 short beeps are heard on the speaker. This will indicate the successful erasing of all the numbers.

AdvanceMobile™ QC1 Control Module

Micro USB Connector

LED Indicator

Channel Control Buttons

Volume Control Buttons

NON FUNTIONING BUTTONS .
(Will be used with future product)

 Diagram 9

The AdvanceMobile™ QC1 Control Module is used to:

A. Program the Direct Connect (PTT) numbers with which the AdvanceMobile™ QC1 will communicate (via the Utility Software available from AdvanceTec).

NOTE: The PTT # must be in the same format as the cell phone # of the phone

1. Connect the USB connector of the USB - Micro USB cable supplied, to a USB slot of a computer.
2. Connect the Micro USB connector to the Micro USB receptacle at the top of the Control Module.
3. Follow the programming instructions set out in the Use Guide included with the Utility Software CD supplied separately with the AdvanceMobile™ QC1

4. A Direct Connect (PTT) number or   Group can be programmed on each of the 20 channels

B. Navigate through the channels.

1. With the AdvanceMobile™ CX1 powered, press the UP or DOWN Channel Control Buttons. Channel numbers 0 – 9 will show in the Control Module screen and again 0 – 9 with . on the right side under the numbers.
2. When the desired channel is reached, press the PTT button to initiate the call.

C. Adjust the volume

1. Press the Volume Control Buttons on the Control Module Up or Down to raise or lower the volume of the AdvanceMobile™ QC1
2. After a volume button is pressed, a blinking dot will appear in the bottom right corner of the Control Module screen to indicate that it is in the volume mode. The Minimum volume is 0 and the Maximum is 7.
3. After the volume has been adjusted, the blinking dot will disappear to indicate that the unit is back in the channel mode.

The Channel and Volume selected will be saved when the AdvanceMobile™ QC1 is powered off, provided it was powered for 3 minutes after the selection was initially made. The selection saved will resume when it is next powered up. If the Control Module looses communication with the main unit, 3 horizontal lines will show in the Control Module window.

Making a Direct Connect (PTT)

1. On the Control Module select the channel associated with the Direct Connect number or Group you want to call and press the PTT button.
2.The LED will turn orange and the chirp tone will be heard on the AdvanceMobile™ QC1 speaker.
3. When the call is connected, speak towards the visor microphone.
4. Release the PTT button to listen.

Answering an incoming Direct Connect (PTT) call

1. To reply to an incoming PTT call, press the PTT button and speak towards the visor microphone.
2. Release the PTT button to listen.

Turning OFF the AdvanceMobile™ QC1

1. When the car ignition is ON, the   AdvanceMobile™ QC1 will stay on.

2. When the ignition is turned OFF <u>and</u> there is no active call in progress, the AdvanceMobile™ QC1 will turn OFF after 30 seconds.

3. The AdvanceMobile™ QC1 will remain on if an active call is in progress even if the ignition is turned OFF.

AdvanceMobile™ QC1 Control Module LED indicators:

Steady RED	Unit not registered with the system
Steady GREEN	Unit registered with the system - OK
Orange	Call in operation

Optional Accessories

<u>Privacy Handset (Part # AT7107A)</u>

<u>Diagram 14</u>

1. To use a Privacy Handset with the AdvanceMobile™ QC1, plug the connector on the end of the coil cord into the corresponding RJ45 receptacle on Junction Box. See Diagram 9 above

2. To answer an incoming call, lift the handset out of the cradle and use as you would a regular phone handset.

3. To terminate the call, replace the handset into the cradle.

4. To transfer and active call from the handset to hands-free mode, press and hold down the round button on the back of the handset and replace the handset into the cradle. Audio will be transferred to the speaker

5. If the handset is not placed in the cradle and there is no call in progress, a beep every second will be heard through the speaker.

Palm Mic.

Diagram 15

1. To use a Palm Mic. with the AdvanceMobile™ QC1, plug the connector on the end of the coil cord into the corresponding RJ45 receptacle on Junction Box.
2. Press the button on the side of the Palm Mic. to answer an incoming call. Speak into the Palm Mic. The pressing of the side button of the Palm Mic. will disconnect the Visor Mic.
3. Release the side button of the Palm Mic. to transfer the outgoing audio from the Palm Mic. back to the Visor Mic.
4. To terminate the call, press the red END button on the Control Module.

Specifications

Input/Output

    Input voltage 10.5Vdc to 32V dc
    Ignition detection:
    Ignition "ON" 2.5Vdc to 32Vdc
    Ignition "OFF" 0V to 2.5V or OPEN
    Outputs Entertainment Mute
    Open Drain
    Continuous current capacity: 50Ma

Audio Specifications

    RJ45 Supports, Palm MIC # AT8410A and Privacy Handset Part # AT7107A
    2.5mm Stereo audio jack
    Speaker impedance: 4 Ohms 10W

Microphone: Eco Canceling   **Noise Canceling (Use only AdvanceTec approved Visor Mic. part # AT8230A)**

Communication Specifications
Full Duplex Communication

      Automatic Start up

      Antenna Impedance: 50 Ohms

      Spurious Response Immunity -51 dBm min

      Stability, unlocked 5 ppm max

      Stability, unlocked 1.9 ppm max

      Spurious Emissions per FCC requirements (3m)

      Conducted -57 dBm

      Radiated 500 uV/m

      Transient Response 0.01% BER during RX-TXRX

      Frequency Acquisition 0.01% max ± 220 Hz RF input

      Blocking Immunity 10% max

Antenna connector
      Mini USB connector with a female center contact (Use this connector for the Antenna provided with the unit.

      50 Ohms impedance

Environmental Specifications
      Operational Temperature -20 to +60°C

      Storage Temperature -40 to +85°C

      Shock MIL-STD-810E METHOD 516.4 Proc. 1, 18 shocks 40 G half-sine 6 – 9 msec 18

      Shocks 2500g's, 0.00075-second pulse

      Vibration 2X-EIA (not tested electronically during vibration) Sine 20 – 2000 Hz, 4G peak

      1 hr per axis – 3 axis (X, y, z) Random 20 – 2000 Hz, 6G RMS; 1 hr per axis – axis (x, y, z)

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