

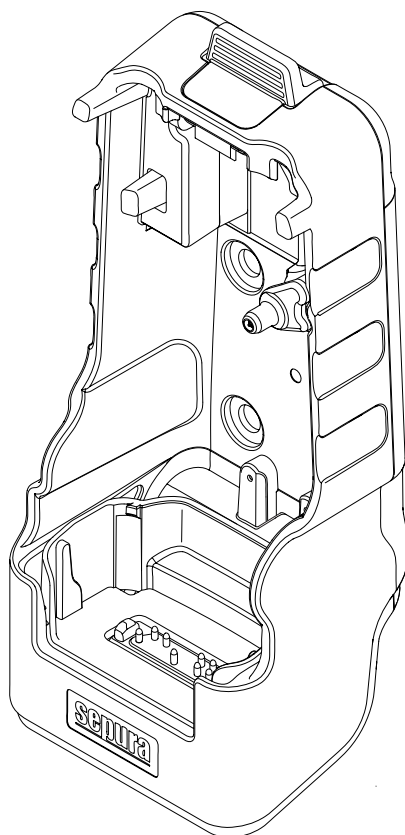
Installation and User Guide

SC21 Car Kit for SC21 hand-portable radios

Part nos. 300-01971

300-01972

300-01973



Thank you for purchasing the Sepura SC21 Car Kit. This product should reach you in good condition. Should you notice any defect or experience any problems with this product, please contact Sepura or your Service Provider immediately.

Introduction

The SC21 Car Kit provides secure retention of the SC21 Series radio within a cradle. The car kit utilises modular connection leads to provide options for battery charging, external antenna connection (RF), and connection to an External Interface Unit (EIU) for use with optional accessories.

Product Variants

The following variants of the SC21 Car kit are available, shipped with the parts indicated in the table.

Part no.	Description	Cradle (12/24V*)	Cradle + Power (12/24V)	300-01972 Cradle + Power + RF (12/24V)	300-01973 Cradle + Power + RF + EIU (12V Only)
300-01971	Cradle	✓	✓	✓	✓
300-00629	AMPS mounting kit	✓	✓	✓	✓
700-00875	Wired charger lead		✓	✓	
300-01998	Antenna lead			✓	✓
700-00877	EIU lead				✓
300-00646	EIU (with vehicle harness)				✓

*Using the optional wired charger lead (700-00875).

Supplied Product Guides

Part no.	Description
SPR-DOC-04284	Installation and User Guide
SPR-DOC-00170	Product Safety Guide

Optional Accessories

Part no.	Description
700-00875	SC21 Car Kit Wired Charger Lead
700-00876	SC21 Car Kit Cigar Lighter Charger Lead
300-01998	SC21 Car Kit Antenna Lead
700-00877	SC21 Car Kit EIU Lead
300-00646	EIU (with vehicle harness)

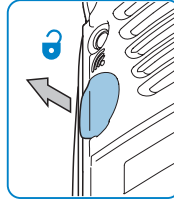
Operation



WARNING! Risk of personal injury: When fitted, the antenna connector in the cradle is sharp and must not be touched. Keep fingers clear from the cradle when inserting the radio into the cradle.

CAUTION! Potential damage to the radio:

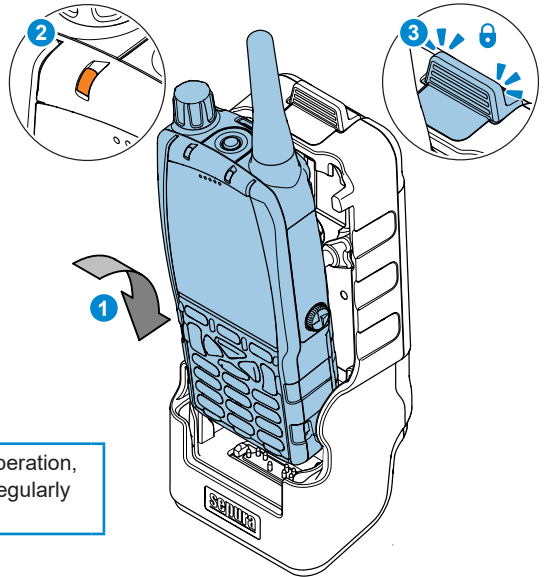
On variants with the RF option, remove the rubber bung from the remote antenna socket on the back of the radio before inserting into the cradle.



CAUTION! Prolonged operation of the car kit with the vehicle engine powered OFF may drain the vehicle's battery.

Inserting the Radio into the Cradle

1. Lower the radio into the cradle and push down lightly to fully engage with the facility socket at the bottom of the cradle.
2. The car kit powers on automatically when the radio is inserted and the charging LED on the radio will illuminate.
3. Push the front of the radio towards the back of the cradle until the latch operates with an audible click.



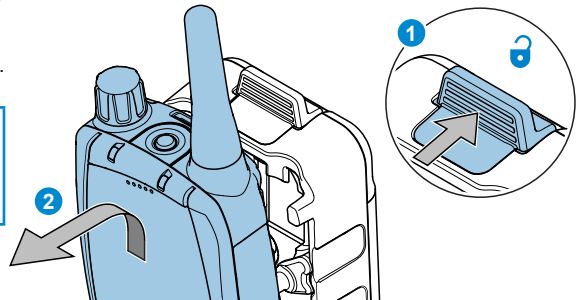
Note: To maintain reliable antenna operation, clean the cradle antenna connector regularly using an aerosol can of clean air.

Removing the Radio from the Cradle

1. Push the release button back on the top of the cradle until the radio is released.
2. Pull the radio up and away from the cradle.



Note: The car kit powers off automatically when the radio is removed and draws negligible power from the vehicle's battery.



Using the Radio with the Car Kit

All of the controls on the radio function as normal. Calls can be initiated, answered and ended by using the controls on the radio. Refer to the radio user guide for further details. Received audio is amplified and fed to the car kit loudspeaker. The operator's voice is picked up by the hands-free remote microphone (where installed).

Function	Action
Set loudspeaker volume	Adjust the radio's volume control (Navi-knob).
Make half-duplex calls using the remote microphone & PTT	Press the external PTT button and speak into the microphone; release to listen.
Make calls using an optional accessory	The car kit automatically senses which supported accessory is in use and functions appropriately.
Make an emergency call using the alarm footswitch	Press the footswitch to initiate an emergency call.

Radio Battery Charging

The battery charges whether the radio is powered on or off and terminates automatically when the battery is fully charged. During charging the tri-coloured LED on the radio indicates the charging progress: Refer to the radio user guide for further information.

Optional Functions

The following functions are provided as standard when the cradle is connected to the External Interface Unit (EIU) and will be connected if specified prior to installation.

Ignition Sense

If connected, the radio will sense the state of the ignition switch.

When the ignition switch is turned off, a configurable timer is started. If the timer is set to zero, turning off the ignition switch will power off the radio. If the timer is not set to zero, the message "Press any key to stop power off" is displayed and the timer started. Pressing any key will reset the timer. When the timer period expires, the radio will power off and any unread messages will be lost.

If the ignition switch is turned on before the timer expires, normal operation will resume.



Note: The timer parameters are set in the radio configuration.
The battery charges whether the radio is powered on or off.

External Mute

If connected, the vehicle entertainment system will be muted during calls.

External Alert

If connected, the vehicle's horn or other external sounding alarm will repeat incoming call alerts for audibility outside the vehicle in noisy environments.

Care and Cleaning

Clean the connector at the base of the cradle and the RF Connector (if fitted) using a soft brush or a lint free antistatic soft cloth either dry or moistened with a mild detergent. If a mild detergent is used, ensure that the connector is left to dry completely before placing the radio into the cradle.

Safety Information

Handle the device with care. The following will help you protect the device and protect your warranty coverage:

Do not attempt to dismantle or modify this product. There are no user-serviceable parts inside. Unauthorised modifications could cause the product to become non-operational and will invalidate the product safety ratings and product warranty.

Risk of fire! Do not cover. Only operate this product in a well ventilated area away from combustible materials.

Never operate the product if it shows signs of damage. Never attempt to charge a battery that shows signs of damage.

Only use Sepura radios and Sepura approved batteries with this product. The use of non-approved batteries may damage the product, and could result in the non-compliance with regulatory requirements, compromise the product safety ratings and invalidate the product warranty.

Do not exceed operating and storage temperature limits.

Do not expose to direct sunlight or direct heat. Prolonged exposure to extreme temperatures (over 55 °C or 131 °F), for example behind glass in direct sunlight, may damage the product.

Do not immerse into water or expose to moisture.

Use original packaging for storage and transportation.

NOTE: For additional information about your Battery Charger please contact customer.support@sepura.com

Battery Use Guidelines

Always follow the warning information on the battery label and in the user manual provided with the charging device.

NEVER use or attempt to charge a battery that shows signs of damage or swelling, or has been dropped or received a 'heavy blow'. Damage to the battery may not always be obvious.

Take care when handling and charging batteries. Do not short-circuit batteries. Avoid deep discharge of batteries.

Do not open or disassemble batteries.

Do not incinerate batteries or expose to temperatures above 85 °C (185 °F).

Do not immerse batteries into water or expose the battery contacts to moisture.

Do not swallow batteries.

Rechargeable batteries have a limited number of charge cycles and may eventually need to be replaced. We recommend replacing batteries every two years or after 500 charge cycles.

Sepura recommends that charging is only performed at an ambient temperature between +5 °C and +35 °C (41 °F and 95 °F).

Charging will be suspended when the internal battery cell temperature is below +5 °C (41 °F) or above +45 °C (113 °F).

Storage of unpacked batteries can cause short circuit and heat generation.

The overall charge capacity of a new battery will depend on its age and how it has been stored prior to operational use.

Do not store near heating devices. Avoid direct sunlight. Storing at higher temperatures may reduce the electrical performance of the battery.

To achieve best battery performance, store batteries in a cool dry place below +20 °C/68 °F. Store at temperatures listed below:

Up to 1 month:-20 °C to +45 °C (-4 °F to +113°F)

Up to 3 months.....-20 °C to +35 °C (-4 °F to +95 °F)

More than 3 months:-20 °C to +25 °C (-4 °F to +77°F)

Do NOT store fully charged batteries. After 6 (six) months storage, charge batteries for 36 minutes. Thereafter, recharge for 36 minutes every 6 months. Failure to store batteries correctly could lead to reduced capacity and reduced battery life and in extreme circumstances damage to or complete failure of the battery.

Installation Guidelines and Recommendations

THIS PRODUCT IS DESIGNED FOR USE WITH SEPURA SC21 SERIES RADIOS ONLY. DO NOT USE THIS PRODUCT WITH ANY OTHER RADIO.

The installation of this product must be performed by a suitably skilled and technical competent person such as a qualified vehicle installation technician.

READ ALL INSTRUCTIONS before attempting to install the product. If you do not understand the instructions STOP and contact your service provider or Sepura for assistance. This product can be installed into various makes and models of vehicles and therefore these instructions are not a definitive guide to installing the product. Always read the vehicle manufacturer's handbook before starting to install the product. Contact the vehicle manufacturer if you are not certain if it is safe to install this product.



CAUTION! This equipment is suitable for 12/24V negative earth vehicles only (EIU option is 12V only). Installation using other supply systems will damage the product.

CAUTION! Power supply leads, antenna cables and speaker wiring must be routed as far away as possible from gas or fuel lines. This reduces the risk to safety in the event of a leak.

CAUTION! Prolonged operation of the car kit with the vehicle engine powered OFF may drain the vehicle's battery. Disconnect the vehicle's battery before commencing installation.

CAUTION! Do not expose product to liquids or moisture.

Do not attempt to dismantle this product. Servicing and repairs to this product must be performed by trained service technicians at Sepura approved service centres. Unauthorised modifications could cause the product to become non-operational and will invalidate the product safety ratings and product warranty.

Ensure that the installation does not impede the normal operation of the vehicle, including the operation of any safety device, such as airbags and seatbelt tensioners.

Electronic control mechanisms within a vehicle can be affected by the use of RF energy such as ABS and transmission controls. Always refer to the vehicle manufacturer's instructions and technical information relating to electronic modules and their wiring harnesses before installing an RF wireless device into a vehicle.

Regulatory Compliance

This installation should comply with local radio communications authorities and/or Health and Safety regulations. Installations in the UK must comply with the *FCS1362 CODE OF PRACTICE for the installation of mobile radio and related ancillary equipment in land-based vehicles* (see <http://www.fcs.org.uk>).

Location Considerations

Do not install the product within the air bag deployment area. In the event of the air bag inflating, the radio could be propelled at great force potentially causing serious injury. The cradle should be positioned so that it does not obstruct or become at risk of damage from any occupant or carried items. The operator should have unrestricted access to the radio's controls and the display should be visible but not distracting whilst the operator is driving. The cradle must not prevent the operator from driving the vehicle safely.

Radio Software

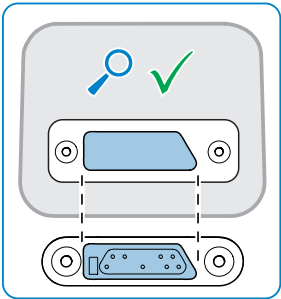
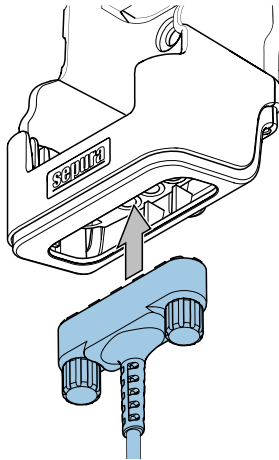
For correct operation of the radio with this car kit, the radio must have radio software version SC1.5 or later installed.

Installation

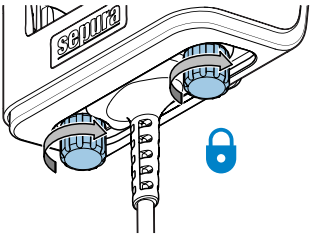
Fitting an SC21 Car Kit Lead

The SC21 car kit cradle is designed to be fitted with any of the modular SC21 car kit leads available (power options or EIU), depending on the requirements of the installation.

- 1. Insert the cradle connector on the lead into the bottom of the cradle. The connector is keyed and can only fit in one orientation.



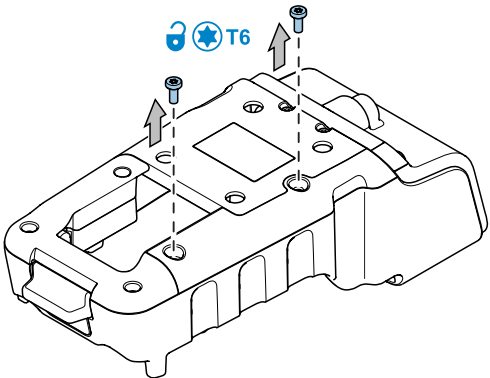
- 2. Tighten the thumb screws to secure the connector in position.



Fitting an SC21 Car Kit Antenna Lead

The SC21 car kit cradle is designed to be fitted with an optional antenna lead kit. This provides connection to an external antenna when the radio is fitted in the cradle.

- 1. Remove the two T6 torx screws from the antenna cover.

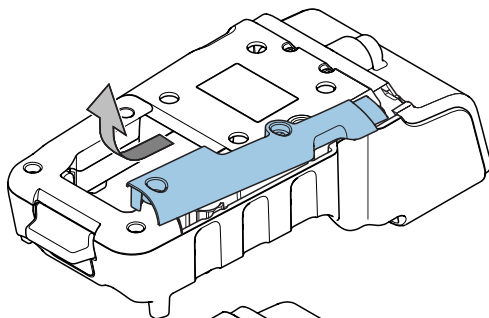


Note: Retain the screws for re-assembly.

2. Slide and lift the antenna cover away from the cradle.

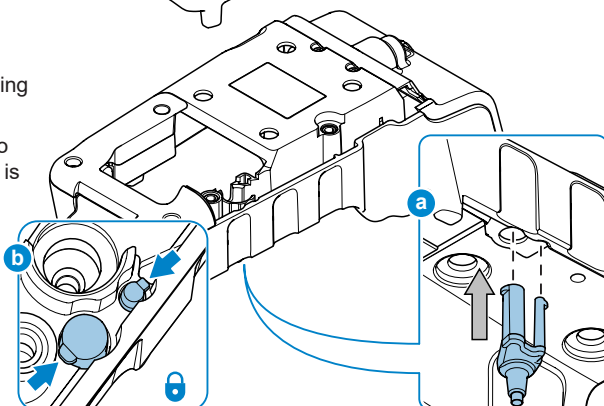


Note: Retain the cover for re-assembly.



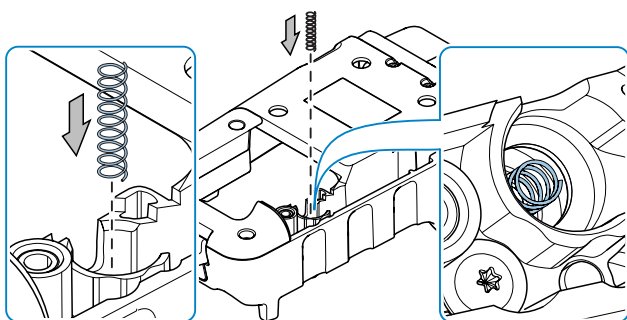
3. To fit the antenna connector shroud:

- (a) Fit into the holes in the cradle housing in the correct orientation as shown.
- (b) Push through the holes until the two clips click into position. The shroud is retained in position by the clips.

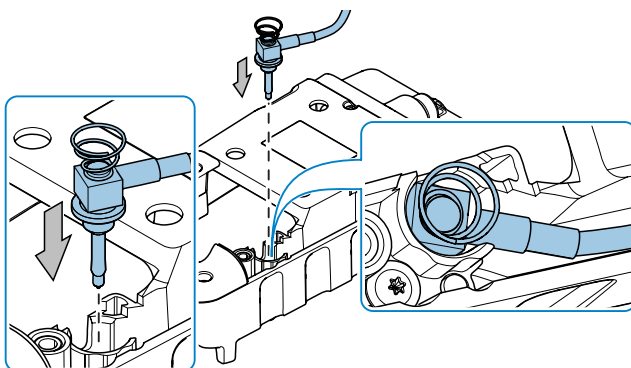


For assembly instructions for the previous screw-retained version of the antenna connector shroud, refer to Issue 3 of the Installation and User Guide (SPR-DOC-04284-3).

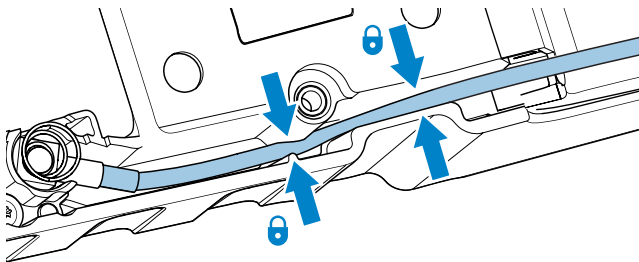
4. Carefully fit the spring into the centre of the of the antenna connector body.



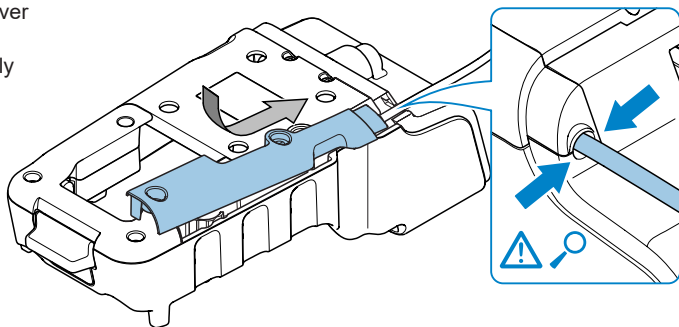
5. Insert the antenna centre pin through the spring and into the antenna connector.



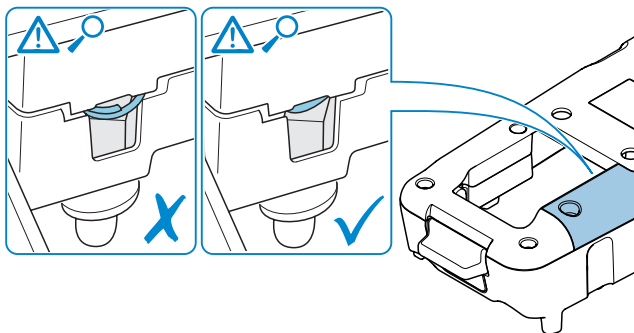
6. Route the cable neatly in the conduit channel. The wedge mouldings in the channel retain the cable in position.



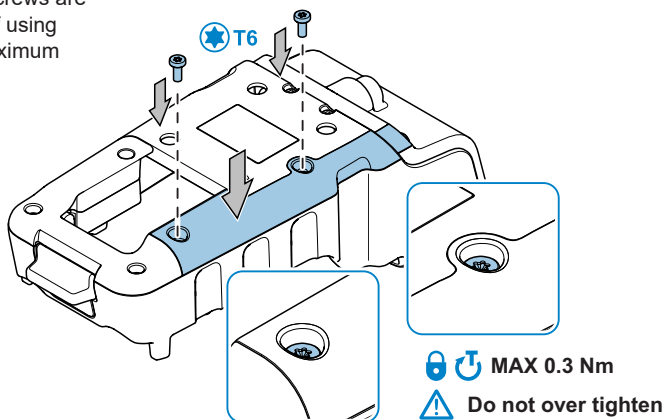
7. Lower and slide the antenna cover back into position. Ensure the antenna cable is seated correctly in the centre of the channel and not trapped.



8. When pushing the antenna cover down, ensure that the spring on the antenna connector is seated centrally and not protruding out.



9. Hold the antenna cover in position and refit the T6 torx screws. Ensure the screws are secure, but do not over tighten. If using a torque screwdriver, apply a maximum torque of 0.3 Nm or equivalent.



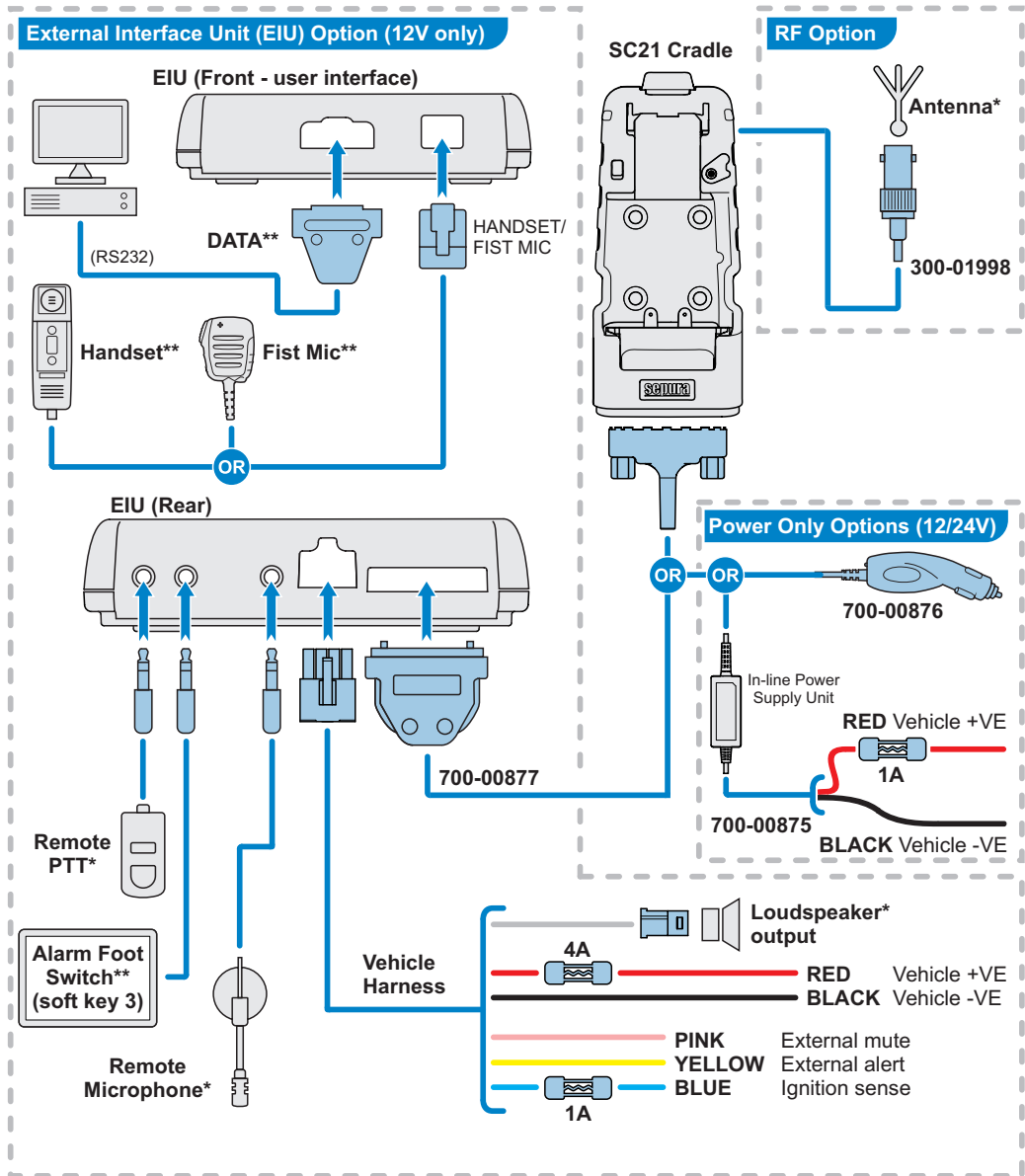
 **MAX 0.3 Nm**
 **Do not over tighten**

Cable Connections and Wiring



CAUTION! All cabling should be hidden and not left loose. Ensure the cables do not rub or press against sharp edges. Cables must be routed with sufficient slack to eliminate the risk of strain damage on the cables or the connection joints. All connectors must be correctly seated and fully secured.

All the available cable and wiring connections and accessory options are shown in the diagram below:



For cable length measurements see
“Car Kit Lead Lengths” on page 15.

* Required accessories (available separately)
** Optional accessories

Power Connections (for Power Only Options)

Wired Charger Lead

Details of the wiring in the charger lead are shown below:

Colour	Electrical Parameters	Fuse Protection
RED	Vehicle positive (12/24V)	1 A
BLACK	Vehicle negative (vehicle chassis)	None

The positive power line must include a fuse (1A) as close as possible to the power source. A fuse and fuse holder are included in the installation kit. The negative power line must be connected close to the battery-to-vehicle-body connection (not directly to the battery) and must not include a fuse.

The wired charger lead includes an integral power supply unit fitted to the cable. See the section “Technical Information” on page 14 for dimension details.

It is recommended that the power cable runs are kept as short as possible.

Cigar Lighter Charger Lead

The cigar lighter charger lead is supplied with an integral 2A fuse in the tip of the cigar lighter connector. The fuse must be replaced with the same type of the correct rating.

Vehicle Harness (for EIU)

Details of the wiring in the vehicle harness are shown below:

Colour	Electrical Parameters	Fuse Protection
RED	Vehicle positive (12 V max)	4 A
BLACK	Vehicle negative (vehicle chassis)	None
PINK	Open drain output, max current 0.5 A	Protected by a re-settable fuse provided inside the car kit
YELLOW	Open drain output, max current 0.5 A	Protected by a re-settable fuse provided inside the car kit
BLUE	Input, signal level 12 V DC (200 µA max)	1 A

Power Connection (thick red and black wires)

The positive power line must include a fuse as close as possible to the power source. A fuse and fuse holder are included in the installation kit. The negative power line must be connected close to the battery-to-vehicle-body connection (not directly to the battery) and must not include a fuse.

It is recommended that the power cable runs are kept as short as possible.

The blue wire provides an ignition sensing input. If ignition sensing is required, a fuse and fuse holder are provided for this purpose in the installation kit. A splicing connector is also provided (if required). A fuse must always be fitted close to where the wire is connected.

Fuse Ratings:

Positive supply	4A
Ignition sense	1A

If ignition sensing is required, crimp the ring terminals to the power cables and directly connect to the vehicle battery when the rest of the installation is complete and satisfactory. If the ignition sensing input is not used, trim the spare wire as short as possible and insulate the free end.

External Mute Output (pink wire)

If the vehicle has an entertainment system with a standard external mute control, connect this output (pink wire) directly to it. During a call, the output switches to ground and the entertainment system is muted. Use the appropriate connector for the entertainment system installed.

If the entertainment system does not have mute control, the external mute output can be used to enable a relay to control the loudspeakers. When enabled, the output is switched to ground and protected by an internal resettable 0.5 A fuse which resets automatically when the fault is cleared. If not used, trim the spare pink wire as short as possible and insulate the free end.

External Alert Output (yellow wire)

If local regulations permit, this output can be used to enable a relay (not for direct connection) to control the vehicle horn or other external alerting device. During a call alert, this output switches to ground and the alerting device is audible outside the vehicle. It is protected by an internal re-settable 0.5 A fuse which resets when the fault is cleared. If not used, trim the spare wire as short as possible and insulate the free end.

Mounting the Cradle

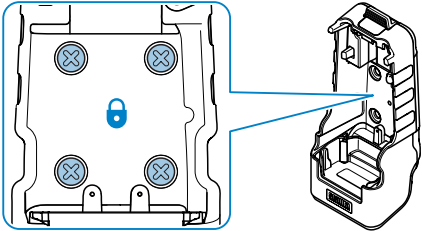
The SC21 car kit cradle should be attached to the vehicle's interior in a convenient position. The cradle can be mounted directly to a suitable surface, or with an AMPS accessory bracket.



CAUTION! Ensure fixing screws are of an appropriate type and length for the surface material the cradle is being mounted on.

Direct Mounting

The SC21 car kit cradle can be mounted directly to the vehicle's interior using the four mounting holes in the rear of the cradle.



AMPS Mounting

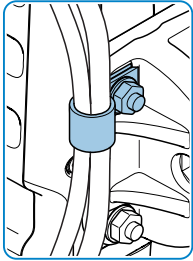
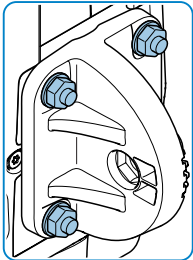
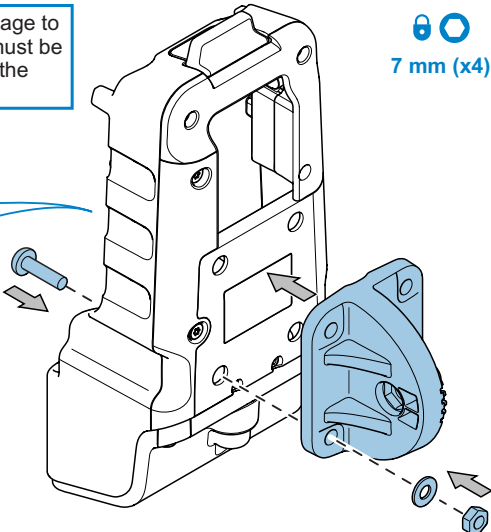
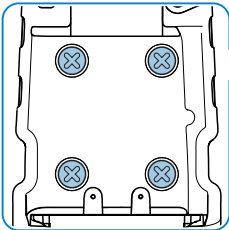
The SC21 car kit cradle can be mounted to the vehicle's interior using a compatible AMPS bracket, such as the Sepura Car Cradle Fixing Kit (300-00629).

1. Attach one of half of the mounting bracket to the rear of the cradle, using the four screws, nuts and washers provided. Attach the p-clip provided to route any cables.

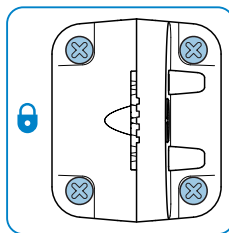


CAUTION! Risk of damage to the radio. The screws must be fitted from the inside of the cradle as shown.

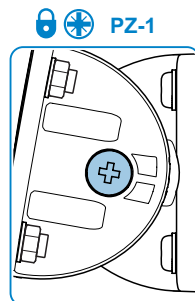
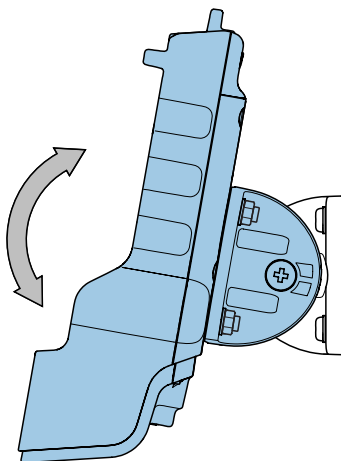
 **PZ-1 (x4)**



2. Secure the other half of the mounting bracket to the vehicle's interior using appropriate fixing screws.



3. Fit the two brackets together using the screw and nut provided. Before fully tightening, adjust the cradle to the desired angle.



Antenna Installation - RF Variants Only

On cradles where the optional antenna lead has been fitted (RF variants), an antenna must be installed. When the radio is inserted into the cradle the radio's antenna is disabled. Follow the manufacturer's instructions supplied with the antenna. Connect the antenna to the BNC socket on the flying lead from the cradle.

Optional Accessories

External Interface Unit (EIU)



CAUTION! To avoid damage to the External Interface Unit, check all wiring for short circuits to the chassis, and other errors, before power is connected.

CAUTION! Do not install the unit within the engine compartment.

CAUTION! Prolonged operation at high volume levels may cause the unit to become hot.

The External Interface Unit (EIU) should be mounted on a firm surface inside the passenger compartment, within reach of all cabling. Attach the unit to the vehicle's interior using, if appropriate, four 25mm self-tapping screws. The data socket should be easily accessible. Connect the cable from the cradle to the socket labelled "CRADLE". Connect the vehicle harness to the socket labelled "AUTO".

Remote Microphone

The remote microphone is a high performance noise cancelling type that is primarily intended for use in cars and light goods vehicles. For best results it should be directed towards the operator and located at a distance of 15 to 25cm from the operator's mouth. The recommended positions are on the "A" pillar (for driver only) or centre-front of roof (for driver and front passenger).

Mount the microphone using the self-adhesive Velcro™ mounting supplied. Alternatively, for rugged applications, secure the base with self-tapping screws. Plug the microphone into the jack socket labelled "MIC".

PTT

The PTT keypad should be mounted in a convenient position using the self-adhesive Velcro™ mounting supplied. Connect the PTT plug into the socket labelled “PTT”.

Loudspeaker Installation

The loudspeaker should be positioned so that it is unobstructed and clearly audible by the operator, but not close to, or in line of sight of, the remote microphone. The recommended position is in the passenger footwell, facing the driver.

Connect the loudspeaker lead to the 2-pin flying connector on the vehicle harness.

Handset, Fist Microphone or Speaker Microphone

Plug the accessory into the RJ45 socket labelled “HANDSET/FIST MIC”.

Alarm Foot-switch (Soft Key 3)

This item is not supplied by Sepura. A suitable switch will need to be terminated in a 3.5 mm stereo jack plug with the switch connected between the sleeve and the tip and the ring open circuit. The alarm will be activated when the switch closes ($Z < 100 \Omega$).

Troubleshooting

Check that the radio functions correctly when installed and removed from the car kit.

If the car kit or radio fails to function, check the following:

- The radio is properly engaged in the cradle
- If ignition sensing is enabled, check the ignition switch is turned on
- The radio battery has charge (the radio requires battery power to transmit). Recharge the radio battery (or allow to charge in the cradle)
- The in-line fuses to the vehicle battery are of the correct rating and the fuse holder is fitted correctly
- The vehicle battery has not discharged during installation
- The antenna and its connections are functional
- The connections to the External Interface Unit are correct

If the problem persists, contact your service provider or Sepura.

customer.support@sepura.com

Technical Information

Ambient Temperature Range:-25 °C to +75 °C (-13 °F to +167 °F)

Storage Temperature Range:-40 °C to +85 °C (-40 °F to +185 °F)

Car Kit Cradle

Dimensions:

Height:165 mm (6.5 in.)

Width:69 mm (2.7 in.)

Depth:55 mm (2.2 in.)

Car Kit Wired Charger Lead (700-00875)

Input Voltage: 10.8 - 30VDC

Input Power:.....10W

Input Current (no radio in cradle):< 1mA

Output Voltage: 9.5VDC 1A

External Input Supply Fuse:.....1A

Power Supply Unit Dimensions:.....66 x 28 x 22 mm (2.6 x 1.1 x 0.9 in.)

Car Kit Cigar Lighter Charger Lead (700-00876)

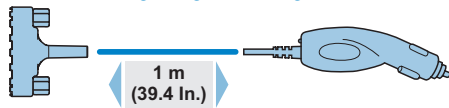
Input Voltage:..... 11.6 - 36VDC
Input Current: 1.5A Max
Input Current (no radio attached):..... < 10mA
Output Voltage: 9.5VDC 1A
Integral Input Supply Fuse:2A

External Interface Unit (EIU)

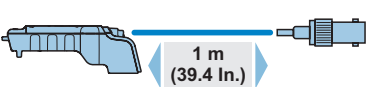
Input Voltage:10.8 – 15.6V
Input Current:2A Max
Input Current Standby:<10mA

Car Kit Lead Lengths

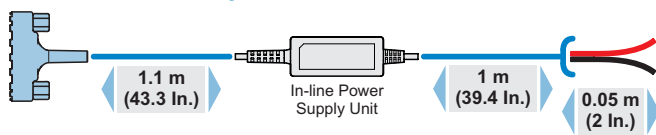
700-00876 Cigar Lighter Charger Lead



300-01998 Antenna Lead



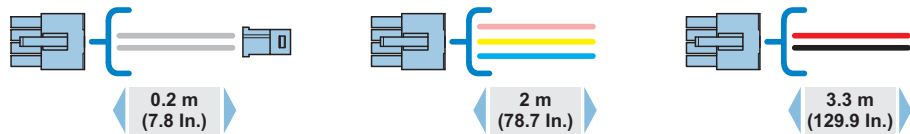
700-00875 Wired Charger Lead



700-00877 EIU Lead



EIU - Vehicle Harness



FCC Supplier's Declaration of Conformity (SDoC)



SC21 Car Kit Wired Charger Lead - 700-00875
EIU (with vehicle harness) - 300-00646

FCC Compliance Statement

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

Responsible Party

Americas Compliance Consulting, LLC dba iCertifi
FCC FRN: 0033399411
Address: 1001 SW Disk Drive, Suite 250, Bend, Oregon 97702
Contact Person: Paul Preston
Tel: 866-885-4575
Email: fccagent@icertifi.com

Waste Electrical and Electronic Equipment disposal information

 This symbol on the product or its packaging indicates that this product must not be disposed of as household or commercial waste. Some countries have set up collection and recycling systems for waste electrical and electronic products. By ensuring that this product is disposed of correctly, you will help prevent potentially negative consequences for the environment and human health, and help conserve natural resources. Please dispose of your waste product according to your national and local regulations. Contact your service provider or Sepura for information on how to return this product for waste disposal.

Certified Antennas

The SC21 radios are certified for use with an external 7 dBi TETRA antenna and integrated 1.3dBi Bluetooth and Wi-Fi antenna. Higher gain antennas shouldn't be used to ensure compliance with RF field strength limits. Minimum distances from radio to users are given in the following table:

Region	Occupational Minimum Distance
Canada	0.3 m
USA	0.3 m
EU / UK	0.3 m



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