

Commander GSM

installation and operation guide



GAI-Tronics

with



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Introduction

Welcome

For many years the GAI-Tronics Commander family of weather resistant telephones have provided communication in the most hostile and extreme environments. Now, in association with Burnside Telecom, the Commander GSM combines GSM connectivity with an internal battery backup facility and the exceptionally robust GAI-Tronics build quality that you expect.

In common with all members of the Commander range, the Commander GSM casing is formed from glass-reinforced polyester to prevent rust and corrosion. All push buttons are responsive and yet sealed against water or dust ingress. The handset is toughened and features a stainless steel connection cable. All fixing points for the Commander GSM are concealed internally to ensure environmental sealing and also to deter damage or removal due to vandalism.

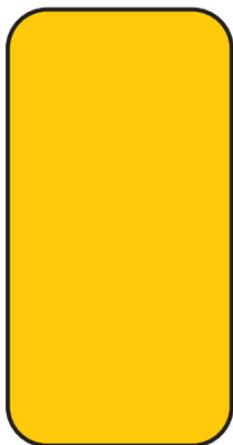
- Vandal resistant handset and cord
- Robust and weather resistant: IP65
- Range of keypad options
- Programmable auto-dialler functions for dialling pre-stored numbers
- Wall, pole or desk mounting
- Simple installation
- Large, easy to see tactile buttons
- Inductive coupler fitted as standard for hard of hearing
- Standard or customised units
- CE compliant



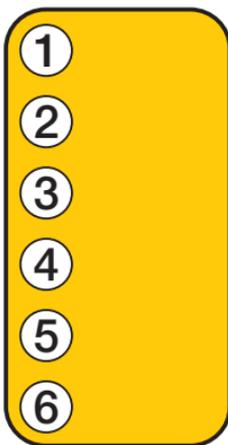
Keypad options

The Commander GSM range is available with full numeric keypads for manual dialling; with auto-dial buttons for dialling pre-stored numbers from a single button press; or a combination of both. Alternatively a blank panel can be specified, whereupon the Commander GSM is programmed to auto-dial a single number as soon as the handset is lifted.

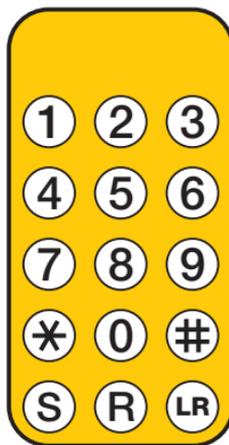
The most common keypad layouts are shown below:



Zero button keypad.
Auto-dial a pre-programmed number on lifting handset



Auto-dial memory buttons only
(6 buttons shown)



Full numeric keypad
(15 buttons)

Other layouts can be created to your requirements. The most common keypad layouts available are:

- 0 Button
- 1 Button
- 3 Button
- 6 Button
- 15 Button

Note: On full numeric keypad layouts (15 button and 18 button) the 'R' button is reserved for future functionality.

Installation

Important notes for installers

Qualified personnel only

Commander GSM telephones are supplied with one of several different power supply options which may require connection of the power supply to an AC mains outlet. The installation must only be carried out by appropriately qualified and trained personnel. Contact GAI-Tronics if installation service is required.

DC power adapter

The DC power adapter supplied as standard with the Commander GSM telephone is for in-building use only. Where the IP65 capabilities of the Commander GSM telephone are to be employed by installing the telephone outside, and subject to weather extremes, the DC power adapter must be either installed in-building or correctly installed within an IP65 enclosure if located outside (enclosure not supplied). The power adapter DC output is routed to the Commander GSM telephone using suitable cabling.

Test tools required

During the testing and commissioning of the Commander GSM telephone, the use of another mobile phone will be required in order to send status and configuration commands via SMS text messages. Alternatively, a laptop computer can be used connected to the internal USB port, see Appendices.

Avoid contamination during installation

All possible measures must be taken to ensure water, fluid or dust does not contaminate the internal components of the telephone whilst unpacking, preparing and installing the telephone in inclement weather conditions or by negligence. Failure to do so may invalidate your warranty.

Beware internal connections

The Commander GSM is normally delivered with the ringer cable and internal battery cable disconnected. Beware of the cable connections between the case front and rear sections. Carefully separate the two sections.

Similarly when assembling the case front and rear sections beware of the cable connections and ensure the cables do not get trapped in the seal between front and rear sections. This may lead to damaged leads and could significantly reduce the environmental protection offered to the internal components and will invalidate the warranty.

Emergency Services warning

If the telephone is configured so that it cannot make a direct call to the emergency services, check with your telephone service provider or infrastructure maintainer whether it is necessary to warn users, and if so provide a suitable warning notice.

Mounting the enclosure

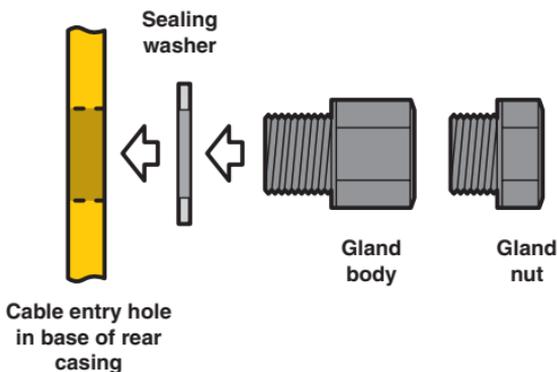
This section covers the three main ways in which the Commander GSM enclosure can be positioned:

- Pole mounted - see page 6
- Wall mounted - see page 8
- Desk mounted - see page 9

Preparing the enclosure

Before mounting the Commander GSM, check the cable routing and requirements. Fit the appropriate gland to the case as follows:

- 1 Remove the RED blanking plug, leaving the other (usually BLACK) in place.
Only fit a second gland if a separate cable is required to the phone (for example when using an external antenna, or external sounder options).
- 2 Select the appropriate sized gland:
 - Use the smaller gland for cables diameters 4 to 7mm.
 - Use the larger gland for cable diameters 8 to 13mm.
- 3 From the outside of the case, carefully insert the selected gland into the threaded cable entry hole.



IMPORTANT: Double check that the threads of the gland and the hole are correctly engaged and are not cross threaded. Hand tighten them at first. If there is any great resistance to tightening, STOP and check the threads. Only use a spanner to tighten the gland when you are certain of correct alignment. Take care not to overtighten.

Tighten the gland so that its sealing washer is compressed against the enclosure surface.

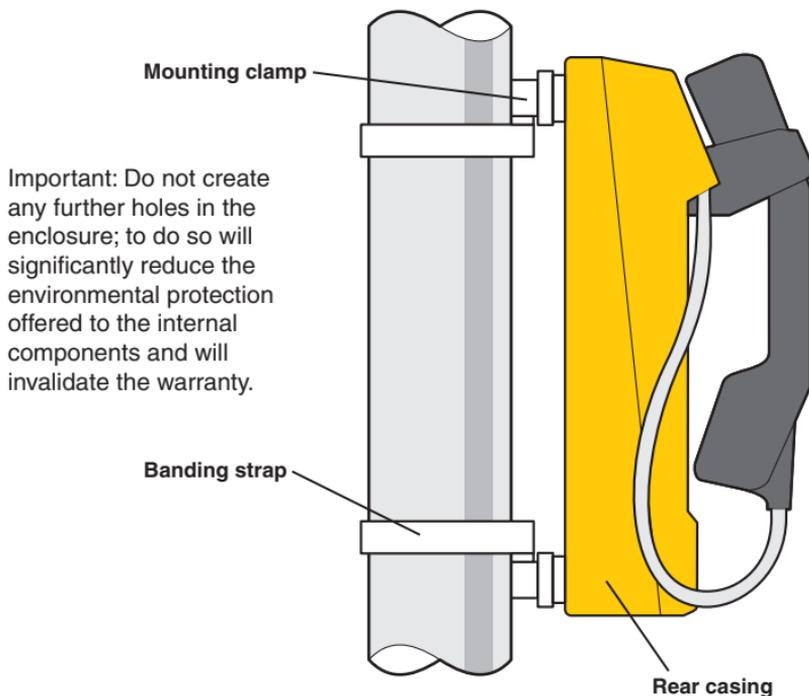
- 4 Proceed with chosen mounting method: Pole, wall or desk.

Pole mounting

The optional mounting kit (No 100-02-0281-001) can be used to attach the Commander GSM to round poles with diameters between 100mm and 200mm, or to square/rectangular section uprights with surface widths between 100mm and 150mm. For flat mounting on surfaces greater than 150mm across, use the wall or desk mounting methods, as appropriate.

Note: Banding straps (large scale worm-drive clamps) are not included in this kit and must be obtained separately. For details of where banding can be obtained, please refer to GAI-Tronics.

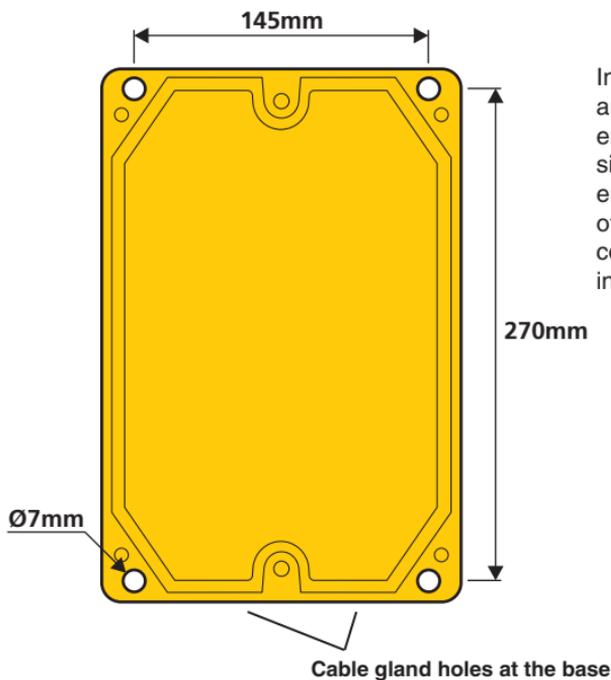
- 1 Use a 5mm hex key to remove the three bolts that secure the front section of the enclosure to the rear section. Carefully separate the two sections. Beware of cable connections between the sections.
- 2 If fitted, remove the four rubber feet from the mounting holes of the rear casing.
- 3 Attach the pole mounting clamps (from the optional mounting kit) to the upper and lower holes of the rear casing. Use the M6 x 25 screws supplied in the kit and tighten them to a maximum torque of 4.5Nm.



- 4 Ensure that the cable glands of the rear casing are facing downwards. Pass the first banding strap around the pole and also around the upper mounting clamp. Move the rear casing, upper clamp and strap assembly up or down the pole until it is at the correct height and then tighten the strap until it holds tight.
- 5 Pass the second banding strap around the pole and also around the lower mounting clamp.
- 6 If the position of the rear casing on the pole is correct, tighten both straps fully.
- 7 Trim off any excess band material. To deter unauthorised removal, once the mounting position has been double checked, the driving head of the band may also be sawn off.
- 8 Now please refer to the **SIM insertion and connections** section on page 12.

Wall mounting

- 1 Use a 5mm hex key to remove the three bolts that secure the front section of the enclosure to the rear section. Carefully separate the two sections.
- 2 If fitted, remove the four rubber feet from the mounting holes of the rear casing.
- 3 Mount the rear half of the moulded enclosure on a suitable vertical surface, (with screws/bolts suitable for the surface material) using the four 7mm diameter pre-drilled holes shown (ensure that the cable glands of the rear casing are facing downwards).

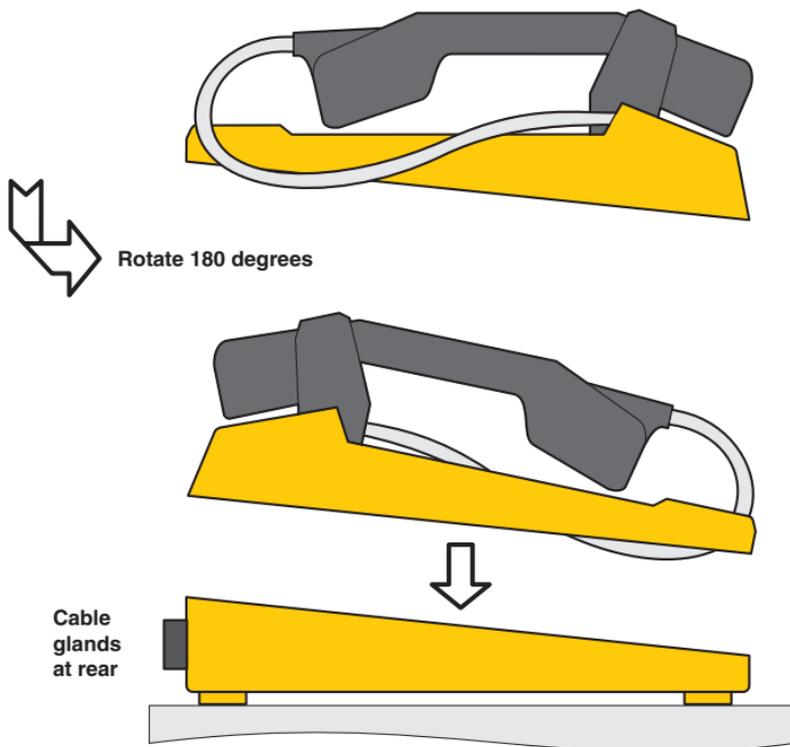


- 4 Now please refer to the **SIM insertion and connections** section on page 12.

Desk mounting

When mounting on horizontal surfaces (greater than 150 x 280mm) use this method to provide a 'rake' for convenient operation and to ensure that the cable entries are located at the rear.

- 1 Use a 5mm hex key to remove the three bolts that secure the front section of the enclosure to the rear section. Carefully separate the two sections. Beware of cable connections between the sections.
- 2 Ensure that the four rubber feet are fitted to the underside of the rear casing.
- 3 In the rear casing, reposition the internal battery pack as detailed in the section **Internal battery pack positioning** on pages 10 and 11.
- 4 Taking care not to trap any wires, rotate the front casing through 180° to produce the 'rake' required for convenient desk operation.

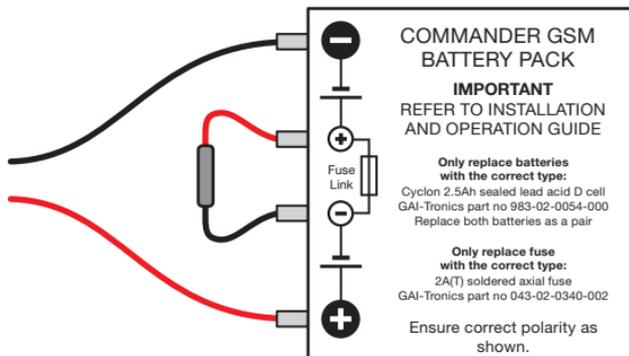


- 4 Now please refer to the **SIM insertion and connections** section on page 12.

Internal battery pack positioning

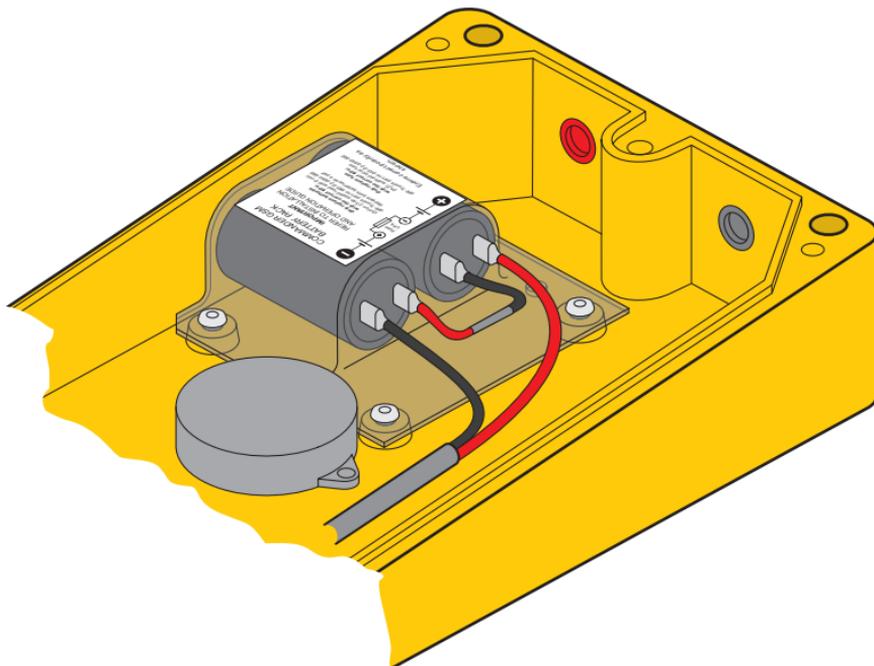
The positioning of the internal battery pack within the casing is determined by how the enclosure will be mounted. The reason is to avoid any clashes with components on the underside of the front section when it is attached for use either as a wall/pole- or desk-mounted phone.

In either orientation, care must be taken to connect the battery leads and fuse link as detailed on the label:



Wall and pole mounting

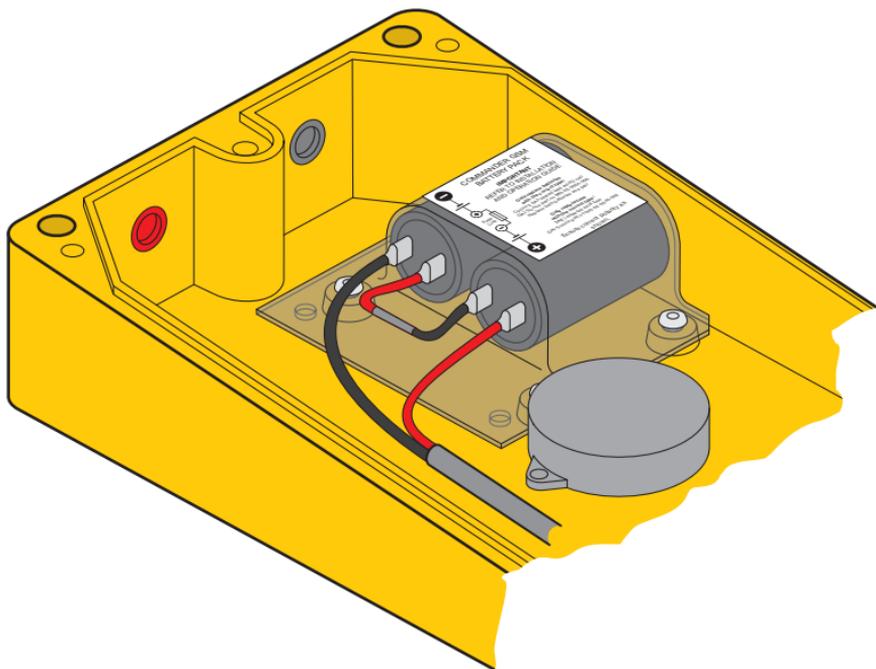
The Commander GSM is supplied as standard with its internal batteries in the correct position for wall and pole mounting, as shown below. No adjustment is required to their position within the enclosure.



Desk mounting

When desk mounting, it is necessary to rotate the front casing through 180 degrees as discussed on page 9. This can cause the circuitry on the underside of the front casing to come into contact with the internal battery pack and so it is necessary to move the batteries.

- 1 Use a medium size Posidrive screwdriver to remove the four battery pack mounting screws.
- 2 Move the battery assembly to the other side of the rear casing and re-insert the four screws (two of the screws will use different mounting holes in the battery pack assembly).
- 3 Ensure that all battery connections are correct and secure.



Important Safety Information

- Only replace batteries with the correct type: Cyclon 2.5Ah sealed lead-acid D cell, GAI-Tronics part no 983-02-00054-000. Replace both batteries as a pair.
- Only replace fuse with the correct type: 2A(T) soldered axial fuse, GAI-Tronics part no 043-02-0340-002.
- Ensure correct polarity as shown.

SIM insertion and connections

This section covers the internal connections and preparations necessary for operation.

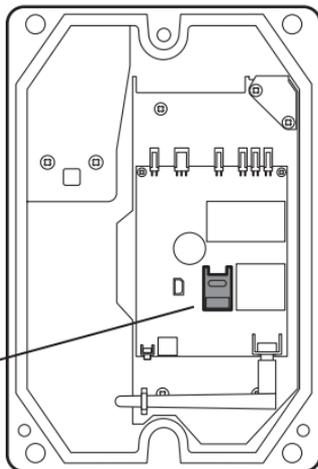
- 1 If the front casing is still in place, use a 5mm hex key to remove the three bolts that secure the front section of the enclosure to the rear section. Carefully separate the two sections. Beware of cable connections between the sections.

Note: During installation it will be necessary to make several connections across from the rear enclosure to the front enclosure. If the phone is mounted vertically, ask a colleague to hold the front enclosure while connections are made to it.

- 2 On the main circuit board, locate the SIM card holder:

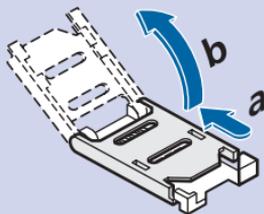


SIM card holder



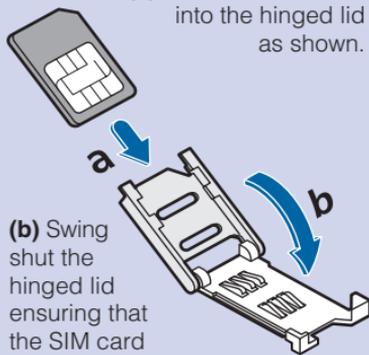
- 3 Carefully install a valid SIM card into the holder:

- 1** (a) Slide back the hinged lid to unlock it, then (b) swing it open.



- 2** (a) Insert the SIM card into the hinged lid as shown.

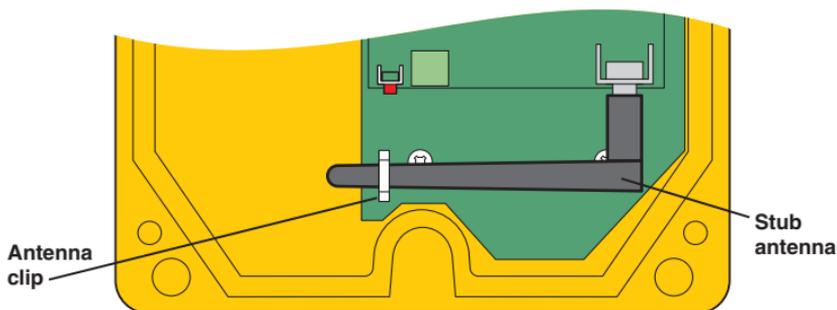
- (b) Swing shut the hinged lid ensuring that the SIM card remains fully in place.



- 3** Press down on the hinged lid and slide it forward so that it locks into place.



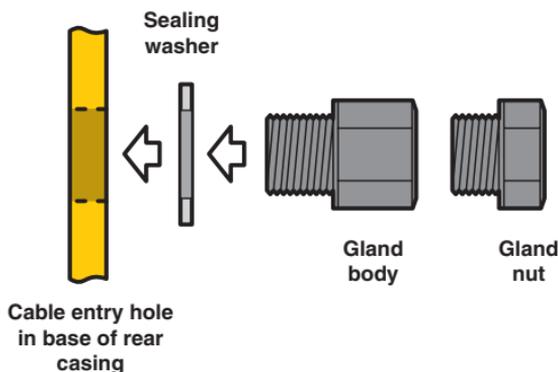
- 4 Connect the supplied stub antenna to the coaxial (SMA type) connector at the base of the main circuit board and secure it with the plastic clip.



Alternatively, if low signal strength demands the use of an external antenna, use the second gland entry, fitted with an appropriate sized gland, to bring the antenna cable into the enclosure and attach it to the coaxial connector on the circuit board.

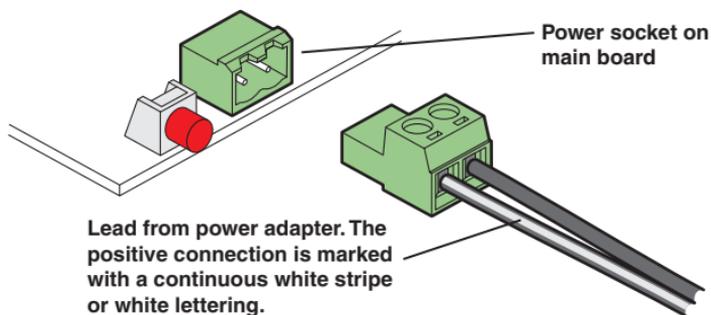
- 5 Mount/locate the supplied power adapter in a suitable location. Alternately, use a suitably specified 12VDC supply:
- Voltage input range is 9V to 18VDC.
 - Power requirement is 3.6 Watts (300mA at 12V).
- 6 Two cable glands are supplied: A smaller gland for cable diameters 4 to 7mm and a larger one for cable diameters 8 to 13mm. Please see 'Preparing the enclosure' on page 5.

Note: If only one gland entry is to be used, use the one with the red temporary cap. Ensure that the black blanking plug fitted to the other gland position remains securely in place.



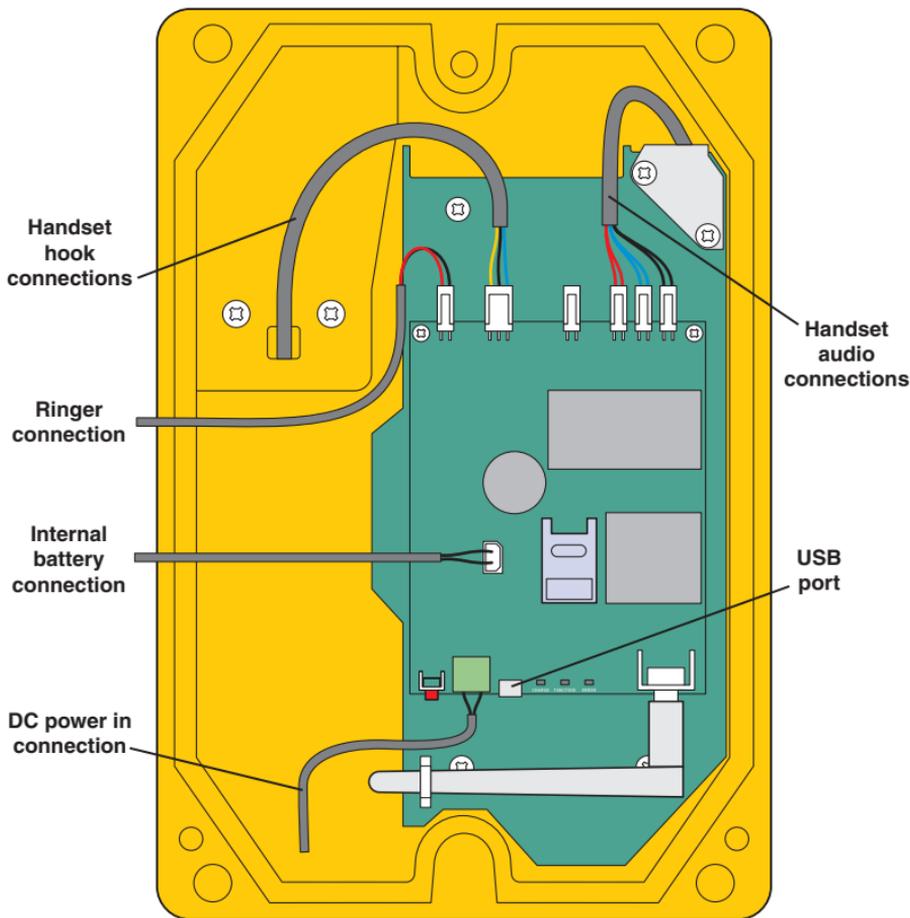
- 7 Place the sealing washer onto the thread of the gland body and, from the outside of the casing, carefully screw the gland clockwise into the threaded hole of the casing so that the sealing washer becomes slightly compressed against the outer surface of the casing. Do not overtighten.

- 8 Feed the DC supply cable through the cable gland nut and gland body at the base of the rear casing. Once sufficient cable is within the casing, tighten the gland nut sufficiently to clamp the cable to make a seal.
- 9 Once the power cable is within the enclosure, attach the supplied green two-pin plug onto the conductors as shown below and tighten the two screws. The positive wire of the DC power cable is identified by a continuous white stripe or white lettering. The circuitry is protected against incorrect polarity.



- 10 With the power adapter switched off, connect the power plug to the socket on the main circuit board as shown above.

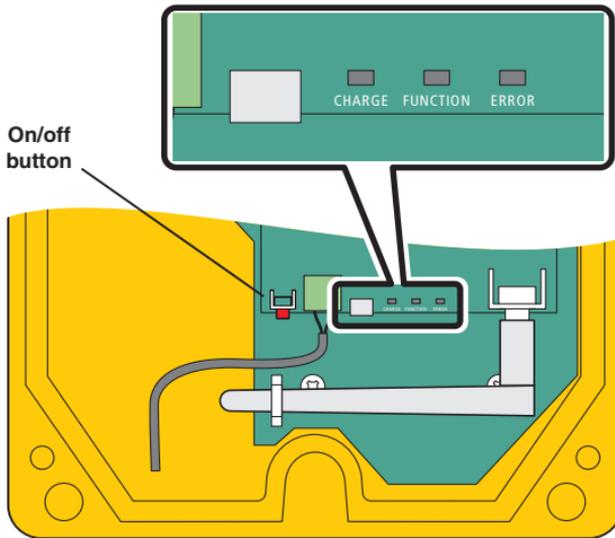
11 Double check that all internal connections are correct:



12 Once all connections have been checked, the phone should be ready for initial switch on and testing. Please see the 'Testing' section on the next page.

Testing the wireless module

Located at the base of the main circuit board are three indicators that provide useful status information:



The indicator functions are as follows:

- **CHARGE** - On, whenever external power is first applied.
- **FUNCTION** - Indicates the current operation. See the table below.
- **ERROR** - Indicates problems with operation. See the table below.

FUNCTION	ERROR	Meaning
Off	Off	Phone switched OFF.
Short/fast	Off	Initialising/searching.
Short/slow	Off	Standby – ready for use.
Long/fast	Off	Incoming call.
On	Off	Call in progress.
Off	Long/Fast	SIM card is locked, PIN code required.
Long/fast	Long/Fast	SIM card is blocked, PUK code required.
Short/slow	Short/slow	Weak signal.
Off	Short/slow	Insufficient power to operate, but charging.
Off	On	Fault, such as no SIM.
On	On	Momentary indication to acknowledge a press of the On/Off button

Operating states of the phone

- **On** - The phone is fully powered and ready to make and receive calls.
- **Charge only** - This is the state that the phone will enter when external DC power is applied. If power is removed, the phone will enter the "Off" state.
- **Off** - This is the state in which the phone is shipped from the factory.

To switch on

If the phone is "Off" and has sufficient battery power or is in "Charge only" mode, pressing the on/off pushbutton will put the phone into the "On" state. The "On" state is remembered, regardless of the amount of charge in the battery or the availability of DC supply.

If the ERROR indicator is flashing Short/Slow, leave the external DC power connected to fully charge the battery, or at least until the ERROR indicator stops flashing.

Note: to fully charge the battery may take in excess of 5 hours depending on the current charge state of the battery.

If the phone is "On" and the battery charge becomes exhausted, the phone will turn off. Once the external DC supply is restored, the phone will automatically enter the "On" state and also start charging the battery.

Indicator power saving

To save power, the internal indicators will not be lit after five minutes of idle (no incoming or outgoing calls). To reactivate the indicators, momentarily take the handset off hook and the five minute timer will be restarted.

To switch off

If the phone is to be shipped, stored, or the SIM changed, press and hold the pushbutton until the FUNCTION and ERROR indicators extinguish. The phone will now be in the *Off (Charge Only)* state.

Note: If the phone is to be shipped or stored, disconnect the internal battery and ringer connections between the case front and rear sections. Then carefully place the front casing onto the rear, taking care not to trap any of the internal cables.

To switch on and test

The following section assumes the Installer has access to another mobile phone capable of sending and receiving SMS text messages. These messages are used to send Test and Configuration commands to the Commander GSM phone.

Alternatively the USB connection can be used. Please see Appendix A.

- 1 Press and hold the red button located at the base of the main circuit board.
The FUNCTION and ERROR indicators will both light and will then go off, when this occurs release the button.
The FUNCTION indicator will flash rapidly to indicate that the phone is initialising and is searching for a valid mobile network.
- 2 After several seconds, the FUNCTION indicator should flash less frequently to indicate that a call may be made or received.
If there is an error, for example no SIM installed, the ERROR indicator will light. *See the table on the previous page for a full list of indicator conditions.*
- 3 Using a mobile phone, send an SMS status command to the phone requesting the current status. Use the following format for your outgoing message:

1234STAT

(where 1234 is the default PIN code.)

The reply should be similar to the following:

State: 14

Signal: -89dBm

Supply: 12.2V

Bat: 4.191V

Temperature

Now: 20

Min: 18

Max: 26

No fault/Fault

Ver: 1.0

- 4 If all is well with the status response, close and seal the enclosure:
 - a Carefully place the front casing onto the rear, taking care not to dislodge or trap any of the internal cables.
 - b Insert the three hex bolts and use a 5mm hex key to tighten the bolts.
 - c Check that a good weatherproof seal exists between the front and rear casings.
- 5 Make a call to the phone to ensure the sounder operates. Then make an outgoing call from the phone to an external number. This will only be possible on a phone with a full keypad otherwise auto-dial numbers will first need to be programmed, see Appendix A.

Note: It is possible to configure the phone to inhibit incoming calls. If so configured, the sounder will not sound, but the phone can still receive SMS messages, acknowledge commands via SMS and communicate via USB.

Further configuration

- For many installations, the steps outlined so far will result in a fully functioning phone and you can proceed directly to the **Operation** section on the next page.
- However, the Commander GSM is also highly customisable for many situations. Detailed configuration is made possible by either sending specially formatted SMS messages from another phone or by connecting a computer via the USB port. For details, please see **Appendix A - Using configuration commands**.

Operation

In operation, the Commander GSM operates in exactly the same manner as any hard-wired tough phone.

To make a call

- 1 Lift the handset and wait for the dial tone.

Note: With the zero button keypad option lifting the handset out of the cradle will automatically dial a pre-determined number.

See Appendix A for details on how to program the auto-dial telephone number.

- 2 Where a keypad is fitted, dial the required phone number or press the appropriate memory button (depending on which keypad option is fitted).

A short while after the final digit is pressed, the phone will attempt to place the call.

- 3 Where a fully featured keypad is fitted:

- Press the 'LR' (Last number re-dial) button to automatically call the last number dialled.

- During a call, press the 'S' button to mute the handset microphone.

Press the 'S' button again to enable the microphone.

Once the handset is replaced, it will automatically remove the microphone mute ready for the next call.

- *Note: The 'R' button is reserved for future functionality.*

Off-hook timeout

If you do not replace the handset on the hook (when not in an active call), the dial-tone will cease after 150 seconds and the phone will enter a low-power idle state. The phone can still receive calls and SMS commands.

To end a call

- Replace the handset on the cradle hook.

To receive a call

- When the ringer sounds, lift the handset and speak to the caller.

Support and aftercare

The purchase of your GAI-Tronics product does not end our commitment to you.

In addition to our warranty obligations, GAI-Tronics are able to offer various levels of maintenance packages, installation and commissioning packages and technical support, from ad-hoc repairs to full maintenance contracts.

By choosing GAI-Tronics as your aftercare provider you are ensured of manufacturer expertise and ISO 9001-certified quality control standards throughout the life of the product.

We can also supply a full range of accessories including mounting posts, beacons and high-volume sounders.

Please contact GAI-Tronics for details: www.gai-tronics.co.uk

Troubleshooting

The phone is not working

- 1 Phone not responding to 1234stat0 request via SMS:
 - a With handset removed from cradle is there a dial tone indicating the unit is ready to make a call or pulsing dial tone indicating no network connectivity?
 - b With the case front removed check if any of the internal indicator lights are illuminated, if not, lift handset from cradle, do indicator lights come on? If yes see Indicator functions under section 'Testing the wireless module' and the various FUNCTION and ERROR Light scenarios below;
 - c Check the unit is switched on by pressing the On/Off button, see section 'To switch on and test'.
 - d If still no Indicator Lights on, check the unit is connected to an external DC power source. If necessary check the input voltage is in the range 9V to 18V.
 - e If it is known no external DC power source is connected check the internal battery is physically connected and if necessary check the terminal voltage coming from the battery pack is greater than 3.75V. If the voltage is below this value the unit could be in auto-shut off mode and the internal battery will need to be charged. Connect the external DC power source and allow the battery to charge for a minimum of 30 minutes, full charge will take in excess of 5 hours.
 - f If there is no voltage present across the internal battery terminals check if the in line battery fuse has been blown? If the fuse has blown, check the internal battery leads have been connected with the correct polarity, if not remedy and replace the in line battery fuse assembly. NOTE: This assembly is a safety component and MUST ONLY be replaced with the correct in line fuse assembly from GAI-Tronics Ltd.

ERROR light is permanently ON

- a Check the SIM card has been installed and has been installed correctly, see section 'SIM insertion and connections'.

ERROR light flashing Long/Fast

- a This indicates the SIM card is locked and a PIN code is required to unlock it. The PIN code can only be entered via the USB connection using the command: AT+CPIN

FUNCTION and ERROR lights flashing Long/Fast

- a This indicates the SIM card is blocked and a PUK code is required from the service provider to unblock. The PUK code can only be entered via the USB connection using the command: AT+CPIN
- b Alternatively, to check the operation of the installation, try another SIM card, remembering to switch off before changing the SIM and to switch on, once complete, to initialise the unit and new SIM correctly.

ERROR light flashing Long/Fast

- a This indicates a weak GSM signal.
- b If the unit has responded to the 1234stat0 SMS command, then compare the results of the reported signal (please see section 'To switch on and Test' on page 16) with the table below.
- c If the unit is not responding to the 1234stat0 SMS command connect a laptop or similar computer to the internal USB port. Please see the preconditions for using the USB port in Appendix A.

Signal level – when reviewing the Status response

- d The following is a guide to the received signal level along with suggestion action to take.

Signal	Comment	Action Required
-104 to -100dBm	Very weak signal, connection not reliable	Essential to re-site the unit and/or install an external antenna
-99 to -90dBm	Poor signal, connection should be reliable but speech may be subject to interruption due to signal fading effects	Performance improvement should be realised by re-sitting the unit and/or installing an external antenna
-89 to -70dBm	Good signal condition	None specifically, re-sitting unit and/or antenna may give further improvement
-60 to -50dBm	Very good signal condition	None

Important safety information

IMPORTANT! This phone, like any wireless phone, operates using radio signals and the wireless network, as well as user-programmed functions, which cannot guarantee connection in all conditions. Therefore, you should never rely solely upon any wireless phone for essential communications (e.g. medical emergencies).

Remember, to make or receive any calls, the phone must be switched on and in an area with adequate cellular signal strength.

Emergency calls may not be possible on all wireless phone networks or when certain network services or phone features are in use. Check with local cellular service providers. Emergency calls may be made even when a SIM card is not installed (subject to network availability) using the 112 dialling code.

Operating environment

Make sure that no special regulation is in force that imposes restrictions on the use of mobile phones. Restrictions to mobile phones would also apply to this telephone. Most modern electronic equipment is shielded from radio frequency (RF) signals. However, certain electronic equipment may not be shielded against the RF signals from your phone.

Pacemakers

Pacemaker manufacturers recommend that a minimum separation of 20 cm (6 inches) be maintained between a handheld wireless phone and a pacemaker. The same restriction should apply to the external antenna of this phone, where fitted. If you have any reason to suspect that interference is taking place, switch off the phone immediately.

Hearing aids

The phone's radio signals may interfere with some hearing aids. In such cases move the antenna as far away as practical or consult your hearing aid supplier.

Other medical devices

Operation of any radio transmitting equipment, including the phone, may interfere with the function of inadequately protected medical devices. Consult a physician or the manufacturer of the medical device to determine if they are adequately shielded from external RF energy or if you have any questions. Switch off your phone in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

Radio transmission equipment

While Burnside products are designed to conform to international standards regarding the acceptance of radio frequency interference, certain installation locations may interfere with their proper operation. We recommend that Burnside equipment is not installed in close proximity to any equipment that generates RF signals (for example, radio transmitters), and is located as far as possible away from it or in a separate room.

Potentially explosive atmospheres

Do not install the phone or site the antenna in any area with a potentially explosive atmosphere and obey all signs and instructions. Areas with a potentially explosive atmosphere are often but not always clearly marked. They include chemical transfer or storage facilities; vehicles using liquefied petroleum gas (such as propane or butane); areas where the air contains chemicals or particles, such as grain, dust or metal powders.

Appendices

Appendix A - Using configuration commands

The Commander GSM has numerous features that can be configured using commands that you send to it either via SMS messages from another phone or by a computer connected to the internal USB port. Most commands entered via the USB port are also accepted while the phone is in *charge only* mode, i.e. switched off but still powered by an external DC power source.

Sending commands by SMS

The first four characters of an SMS command must be the phone PIN code (the default is *1234*). This is then followed by the command(s).

Example 1: **1234STAT** *will return status information about the phone.*

Example 2: **1234CFG5=1** *configures the phone to inhibit incoming calls.*

Notes for SMS commands

- You can enter a space character after the PIN for clarity; this will be ignored by the phone.
- All commands that do not implicitly require a response are automatically replied to with a summary of the phone status. This automatic reply may be suppressed by placing a stop character after the pin number. For example, **1234.cfg5=1** will change the configuration without replying. An error in the command will always result in a reply.
- Commands may be concatenated by entering a semicolon delimiter, for example **1234CFG5=1;STAT**
- Commands are not case sensitive.
- To read multiple parameters, a suffix wild card may be used, for example: **CFG*?**

Sending commands via USB port

IMPORTANT: Before connecting the Commander GSM to a computer via USB, ensure the USB device driver software has been downloaded from www.burnsidetelecom.com, downloads section link and installed on the computer. Configure Hyperterm or similar USB communicator to connect to the virtual COM port assigned to the USB driver. Connect at 115299bps 8/N.

The first three characters of a USB command must be **AT!** This is then followed by the command(s).

Example 1: **AT!STAT<cr>** where <cr> is a carriage return/enter

Example 2: **AT!1234CFG5=1<cr>** sets the phone to inhibit incoming calls.

Notes for USB commands

- Echo "E" and command response "Q" (OK/ERROR) behave differently when the phone is in charge only mode or active. In charge only mode, echo and response is turned on with ATE1Q0 or off with ATE0Q1, the default is no response. This is to maintain compatibility with legacy flash programming software. When the phone is active, "E" and "Q" comply with normal ETSI standards.
- Commands may be concatenated by entering a semicolon delimiter, for example **AT!1234CFG5=1;STAT<cr>**

List of commands (for use with SMS and USB)

STATn Returns the status of the phone. If **n** is omitted, it is interpreted as zero.

n ⇔ **0** for general status, useful during installation:

State: **s** (phone state, see table below)

Signal: -89dBm

Supply: 12.2V

Bat: 4.191V

Temperature – (in degrees Celsius)

Now: 20

Min: 18

Max: 26

No fault/Fault

Ver: 1.0

State (**s**) value returned from a **STAT0** command.

Value Meaning

1	Outside operating temperature limits.
2	Charge only.
3	Insufficient power to operate in solar charge mode.
4	Error condition, communication failure with wireless module.
5	Phone is initialising.
6	Checking SIM present.
7	No SIM installed.
8	Checking SIM lock.
9	Waiting for SIM PIN.
10	Waiting for SIM PUK.
11	Post SIM unlock initialisation phase.
12	Settle time for reading SMS memory.
13	Flushing SMS memory.
14	Ready for call (always in this state when replying via SMS)

n ⇔ **1** for information about faults:

Hook: On/Off

Power break: No/Yes

Loop: Pass/Fail

Acoustic loop: Pass/Fail

Keyboard: Pass/x stuck on

Battery: OK/Fault

CLRTEMP Clears the maximum and minimum temperature memories (as a result, they will initially show the current actual temperature).

CFGn=x Read and write configuration setting.

n ⇒ 0 My number sending. Determines whether the phone number is declared to the destination being called:

x ⇒ 0 Use the setting defined by the network (default).

x ⇒ 1 Number is always sent (if supported by the network).

x ⇒ 2 Number is always withheld.

n ⇒ 1 Dial delay for models with a keypad. Determines the delay after dialling the last digit until the call is made:

x ⇒ 1 to 9 seconds (default is 4).

n ⇒ 2 Ring cadence. Four different cadences available, which are useful to differentiate between phones in close proximity:

x ⇒ 0 to 3 (default is 1) Note: *x=0 is silent, no ring.*

n ⇒ 3 Tone region. Determines the frequency and cadence used for progress tones:

x ⇒ 0 UK (default).

x ⇒ 1 Ireland.

x ⇒ 2 Netherlands.

n ⇒ 4 TAPI voice compatibility. Provides voice call dialling compatibility with standard software (if connected to a computer):

x ⇒ 0 Disable TAPI compatibility (default).

x ⇒ 1 Enable TAPI compatibility.

n ⇒ 5 Call restrictions:

x ⇒ 0 No restriction (default).

x ⇒ 1 Inhibit incoming calls.

x ⇒ 2 Inhibit outgoing calls.

x ⇒ 3 Inhibit incoming and outgoing calls.

n ⇒ 6 Call restrictions. Limit the duration of a call. When 30 seconds of restricted call time remains, a beep is heard in the handset to warn the caller:

x ⇒ 0 to 120 minutes (default is 0, no restriction).

n ⇒ 7 Auto dial. This configuration can be used for all models but is specifically for use with the zero-button keypad phone to enable the 'Auto-dial on lifting the handset' feature:

x ⇒ 0 Normal dialling that requires digits to be dialled (default).

x ⇒ 1 Dials number stored in memory location 10, see PNUM command (programming memory locations).

n ⇒ 8 Call progress announcement mode. Instead of tones, voice announcements may be played to suit the particular condition of the phone. For example “We are unable to connect your call, please try again later”.

Note: This feature is an additional option. It must be specified at the time of ordering.

x ⇒ 0 No announcement, only progress tones (default).

x ⇒ 1 Normal dial tone, then progress announcements.

x ⇒ 2 Prompt replaces dial tone then progress announcements.

n ⇒ 10 SMS command enable (via USB only). If the phone is to be used with a computer running software to handle SMS messages, you need to disable the SMS commands on the phone:

x ⇒ 0 Disabled.

x ⇒ 1 Enabled (default).

n ⇒ 12 Maximum dialled number length. The maximum number of digits to be accepted can be defined.

x ⇒ 1 to 20 (default is 20).

n ⇒ 13 Type of relay fitted. Two normal (astable) relays or a single latching type that uses two coils may be fitted. This configuration is set at manufacture.

Note: This feature is an additional option. It must be specified at the time of ordering.

x ⇒ 0 Normal (default) 1 or 2 relays can be fitted.

x ⇒ 1 Latching, a single relay with two coils.

n ⇒ 15 Activate relay for ring indication. One of the relays may be used to activate an external sounder. The relays switch at selected ring cadence.

x ⇒ 0 No action (default).

x ⇒ 1 Use relay 1 with ring cadence.

x ⇒ 2 Use relay 1 continuously.

x ⇒ 3 Use relay 2 with ring cadence.

x ⇒ 4 Use relay 2 continuously.

n ⇒ 16 Power supply type. The type of power supply used should be specified in order to achieve optimal performance. When selecting **1** for external battery, the power consumption is optimised to improve the efficiency and to extend the standby time of the external battery.

x ⇒ 0 Normal and solar DC supply (default).

x ⇒ 1 External battery.

CFGn=x (continued)

n ⇒ **19 Earpiece level**. The output level may be increased in four steps of 3dB.

x ⇒ **0** Normal level (default).

x ⇒ **1** +3dB.

x ⇒ **2** +6dB.

x ⇒ **3** +9dB.

x ⇒ **4** +12dB.

n ⇒ **20 Microphone gain**. The microphone gain may be increased in three steps of 6dB.

x ⇒ **0** Normal level (default).

x ⇒ **1** +6dB.

x ⇒ **2** +12dB.

x ⇒ **3** +18dB.

n ⇒ **21 Voice prompt level**. The output level may be increased in four steps of 3dB. *Note: This feature is manufacturing option. It must be specified at the time of ordering.*

x ⇒ **0** Normal level (default).

x ⇒ **1** +3dB.

x ⇒ **2** +6dB.

x ⇒ **3** +9dB.

x ⇒ **4** +12dB.

AUTOn Shorthand way of combining **PNUM10=n** and **CFG7=1**, where **n** is the phone number. This is used for setting the phone number to be automatically called when lifting the handset, on the zero button keypad version. Example: 1234auto07771230231

CLOCK Only via SMS, sets the clock to the time recorded in the SMS delivery from the mobile network. For setting via USB, see ETSI +CCLK

INIT Restarts the phone (cold boot).

OUTPUTn=i Sets the output of relay **n** (1 or 2) to setting **i** (0 - Off or 1 - On). If a single bistable relay is installed, selecting relay one or two will make no difference.

PHPIN Read (only via USB) and write phone PIN, fixed length of 4 digits (default 1234).

PNUMn

Programming Memory Locations: Is used to read or write phone numbers stored in the phone memory locations. There are twelve memory locations in total. Ten of the locations (n=0 to n=9) are reserved for storing the phone numbers for memory keys/buttons on an appropriate keypad. For example to store a phone number in location n=0 the SMS message would be:

1234pnum0=07771230321

The SMS command will be acknowledge by pnum being sent via SMS, unless a stop character is inserted after the PIN number (1234.pnum....).

To read or check the number stored in any one of the locations send the following SMS command, for example to check location n=0 send:

1234pnum0?

(Or to read all stored numbers send SMS command **1234pnum*?**)

The phone will respond via SMS with a particular stored number or all stored numbers depending on the command sent, for example **PNUM0:07771230321**.

Programming Auto-dial Number: Location n=10 is reserved for the phone number to be Auto-dialled as soon as the handset is lifted off-hook; primarily for the zero button model. To program location n=10 via SMS follow the same format as above, for example:

1234pnum10=07773450543

*Note: **CFG7=1** must also be configured to enable the auto-dial feature. Alternatively the programming of **PNUM10** and the setting of **CFG7=1** can automatically be combined by using the shorthand command **AUTO**n (where here n is the phone number), for example:*

1234auto07773450543

Memory Location n=11: This is the location for storing the special phone number used with the GAI-Tronics/Burnside System Management Application. The application and supported features are an additional option and not detailed here. For further information contact your supplier.

PVER

Returns the prompt version and language (<ver>,<lang>).

Note: This feature is an additional option and is set at the time of manufacture. It must be specified at the time of ordering.

VER

Returns the firmware version number.

Appendix B - Technical Specifications

Operational Requirements

- GSM network coverage. The P400 provides Quad-Band Global cellular connectivity and is designed to work in public and private mobile networks. All that is required is an appropriate SIM card, which should be sourced separately.

Not suitable for

- Payphone extensions
- Public Emergency Telephone System (PETS)

Product features

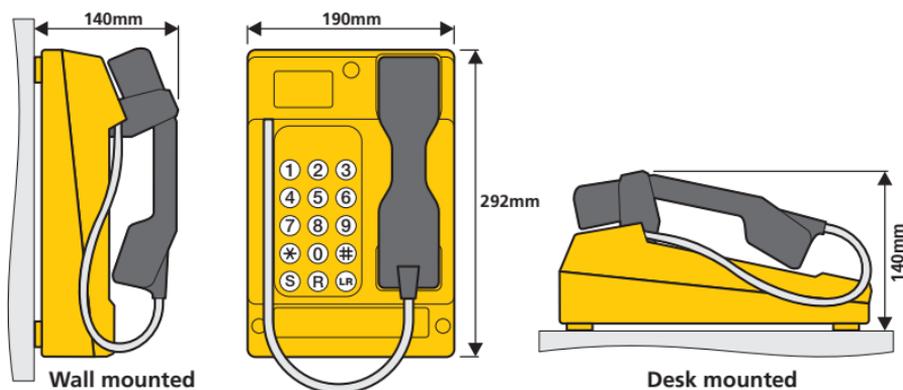
Power supply	DC line power with battery backup. Also designed for use with external DC source, battery or solar panel, 9 to 18V, less than 4W total power draw.
Hookswitch	Electronic with no external moving parts
Ringer loudness	80dBA @ 1m
Handset	Suitable for inductive coupling to Hearing Aids having a 'T' switch position. Tested to ETS 300-381.

Environmental limits

Temperature:	Operating: -20°C to +60°C Storage: -40°C to +70°C
Relative Humidity	Up to 95% (non-condensing)
Ingress Protection	IP65

Physical characteristics

Casing material	Glass reinforced polyester
Handset Material	Cycloxy (2850) with stainless steel or polyester curled cord.
Weight	3.5kg
Dimensions	



Appendix C - Compliance to standards

European Directive

1999/5/EC – European Radio & Telecommunications Terminal Equipment Directive.



EMC

Information Technology and Generic Standards for commercial and heavy industrial environments

Emissions:

EN 50121-4:2006 (referencing EN 61000-6-4:2001)	Radiated disturbance Continuous disturbance	CISPR 11:2003, Class A
EN 61000-6-4:2007		
EN 55022:2006 inc A1:2007 & A2:2010	Radiated disturbance & Conducted disturbance	CISPR 22:2006
EN 61000-3-2:2006 inc A1/A2:2009	Mains harmonics - Class A	
EN 61000-3-3:2008	Mains voltage flicker (dmax=4%)	

Immunity:

EN 50121-4:2006 & EN 55024:2010	Electrostatic discharge	EN 61000-4-2:2009
	Radiated RF interference	EN 61000-4-3:2006
	Fast transient bursts	EN 61000-4-4:2004
	Surge	EN 61000-4-5:2006
	Conducted RF field	EN 61000-4-6:2009
	Power frequency magnetic field	EN 61000-4-8:1993 inc A1:2001
	Pulse magnetic field	EN 61000-4-9:1993
	Voltage dips and interruptions	EN 61000-4-11:1994

Safety:

EN 60950-1:2006 + A1:2010
IEC 60950-1:2005 + A1:2009

Information Technology Equipment.

Recycling Information

The symbol shown here and on the product means that the product is classed as Electrical or Electronic Equipment and should not be disposed with other household or commercial waste at the end of its working life.



The Waste of Electrical and Electronic Equipment (WEEE) Directive has been put in place to recycle products using best available recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid the increasing landfill.

Business users should contact their suppliers and check the terms and conditions of the purchase contract and ensure that this product is not mixed with other commercial waste for disposal.

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www.ctxd.com

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The policy of GAI-Tronics and Burnside Telecom is one of continuous improvement, therefore the parties reserve the right to change specification without notice.