Titan

Commander

Installation and User Guide

Titan Telephone (1066)
Commander Telephone (1065)
Standard keypad models

GAI-TRONICS

CONTENTS

1. Safety and Care Information

▲ **The safety of the user/installer relies on the isolation of the telephone network and not on the earthing of the case**

▲ **The spring-loaded door (Titan models only, where fitted) can close sharply. Take care not to trap fingers etc., during installation and use.**

▲ **Please read these instructions thoroughly before starting installation. These products must be installed by competent personnel familiar with telephone installation.**

▲ **Telephone network voltages can be hazardous. Take adequate precautions when opening the case or installing. If in doubt, disconnect the telephone line elsewhere before accessing the line connections.**

▲ **For increased protection against lightning transients, attach a local earth to the main terminal block (see section 6)**

2. Product Description

This manual describes the standard keypad versions of the Titan and Commander telephone ranges. Models are available with full numeric keypads for manual dialling, or with auto-dial buttons for dialling pre-stored numbers from a single button press, or a combination of both. Common keypad layouts are shown below.
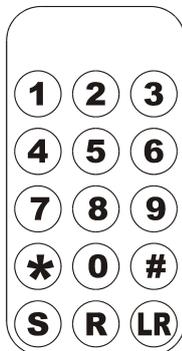
Full numeric keypad 15 button
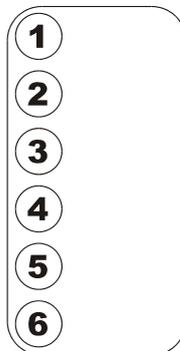
Auto-dial only (6 memory buttons shown)
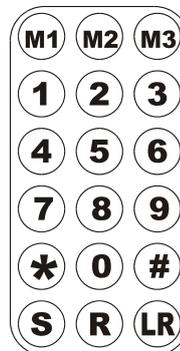
Full numeric with 3 auto-dial memories (18 button)

Although functionally and electrically identical, (i.e. the operation, programming and connection details are common), Titan and Commander differ physically, so the installation and mounting details are described separately.

2.1. Changes from previous versions

This manual describes an updated range of products introduced in April 2005. For those familiar with GAI-Tronics' products, the list of new or changed features is as follows:

- New terminal layout (section 6.1).

- All option selections are by jumper settings

- New programming procedure for auto-dial numbers

- Increased lightning protection (section 9).

- No separate Cap-Shunt link (ringing is permanently enabled).

- Compliance with ETSI European telephony standards (previous versions were to British standards) section 9.

- Compliance with railway EMC standards (section 9)

- Second hookswitch option (section 6.2)

- Hot Dial option (section 3.6)

For the full list of product features, please see the specifications in section 9.

2.2. Titan features
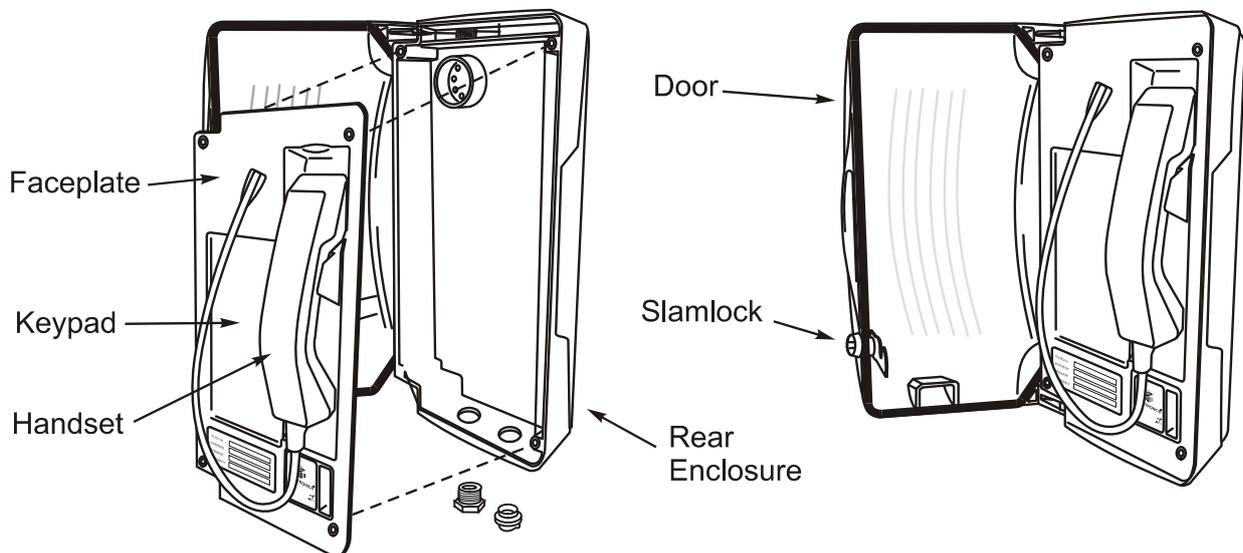
Titan is a family of rugged, weather-resistant metal-bodied telephones available with a range of handset types, keypad configurations, colours and enclosures, based around a common faceplate style.

Most Titans are equipped with a heavy-duty spring-loaded door, but models are available without door and also as faceplate only, for flush mounting.

Titan doors may be fitted with slamlocks opened by an 8mm square socket key.

2.3. Commander features
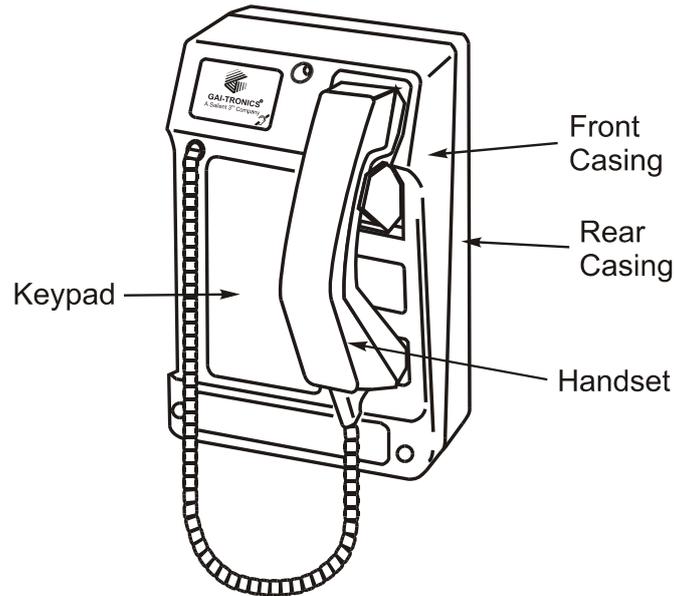
Commander is a family of rugged, weather-resistant telephones manufactured from moulded glass-reinforced polyester. A range of handset types and keypad configurations are available.

3. Operation / Testing

3.1. Making and Receiving calls

To make a call, lift the handset, wait for dial tone, dial required digits (or press required memory button or Last Number Redial where provided) and wait for connection.

To end a call, replace the handset in its cradle.

To receive a call, lift the handset when ringing is heard.

3.2. Last Number Redial

(15 and 18 button versions only)

Lift the handset, press LR to redial the last dialled number.

3.3. S Button Function

(15 and 18 button versions only)

The function of the S button is set by a jumper on the circuit board (see section 7.3.3) to be either:

- **Secrecy** (Mute) - During a call, press and hold the S button to mute the microphone , or

- **Store** (used during the programming of auto dial memories (see section 7.1)

3.4. Recall Function

(15 and 18 button versions only)

When a call is in progress, press R to send a "recall" signal to the exchange. Only time-break recall signals can be generated, but the length of the break can be selected (see section 7.3.7)

3.5. Call timer

The phone has a selectable call timer that can limit the maximum call duration to approximately 7 minutes.

When ON, the timer forces the phone back off line after the preset time. This prevents the line remaining tied if the handset is left off-hook. The timer is factory-set to OFF by default.

3.6. Hot Dial Option

(0 button versions only)

As a factory-configured option, the phone can be supplied with no dialling buttons but set to automatically dial a user-programmed number when the handset is lifted.

When this option is enabled, the phone will pause for approximately 3 seconds after the handset is lifted (to allow time for dial tone to be supplied) and then dial the number programmed in memory 1. See section 7.2 for programming instructions.

4. Installation

4.1. General

IMPORTANT

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.

These telephones are supplied without connection leads – cabling to the telephone network must be supplied and installed by the installer. Because of this, extra precautions must be observed: installers must ensure that they have the permission of the owner of the PABX or telephone network to which the telephone is to be connected, and that installation is carried out by trained personnel. Contact GAI-Tronics if installation service is required.

IMPORTANT

Installation details differ between the TITAN and COMMANDER product ranges –please make sure you know which product you are installing and refer to the appropriate sections below.

4.2. 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. A warning label, which can be fixed to the front of the telephone, is provided.

4.3. Titan

1. To prepare for installation, open the door (where fitted), then undo the four retaining screws to remove the faceplate from the rear enclosure. A 3mm Allen key is required.

   Caution – take care to support the spring-loaded door whilst open to prevent it slamming shut and trapping fingers.


RINGER CABLE

RINGER

HANDSET CABLE

ABS BACKBOX

HOOKSWITCH CABLE

4 OFF BACKBOX MOUNTING SCREWS

CON 5 - ADDITIONAL HOOK SWITCH CONTACT (OPTIONAL)

CON 1 - MAIN TERMINAL BLOCK
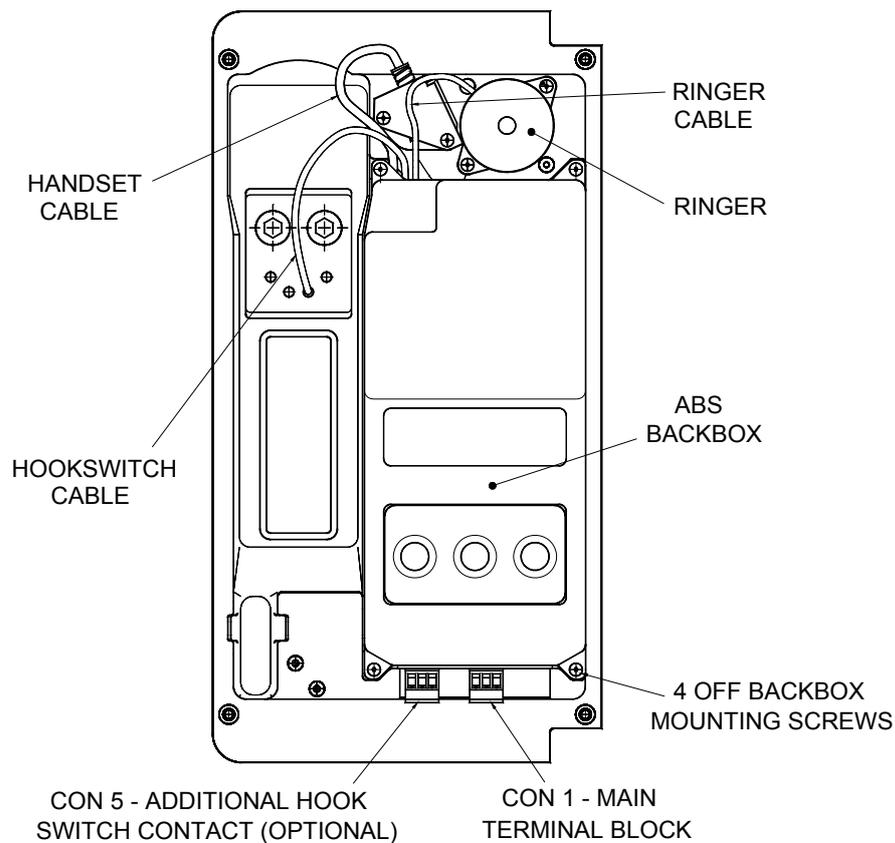
UNDERSIDE OF FRONT PLATE WITH BACKBOX IN POSITION

2.   All connections are on the lower edge of the circuit board on the rear of the faceplate.

3.   All option settings and programming facilities are on the circuit board protected by a plastic backbox, which must be removed for access.

4.   The Titan telephone is intended for vertical installation to a wall or pole. Select the required mounting method (section 5) and mount the rear enclosure first where applicable.

5.   Route the required cables through glands as appropriate, and make connections following section 6.

6.   Make the appropriate option settings, and program any required auto-dial numbers, following section 7. Test the programmed numbers and settings. Replace the plastic backbox.

7.   Re-fit the faceplate ensuring a weatherproof seal

8.   Test the operation of the telephone (section 3). Installation is now complete.

4.4. Commander

1.   All connections and option settings are on the circuit board housed in the front casing.

VIEW INSIDE COVER SHOWING
P.C.B. CONNECTIONS

VIEW INSIDE BASE SHOWING
RINGER LOCATION
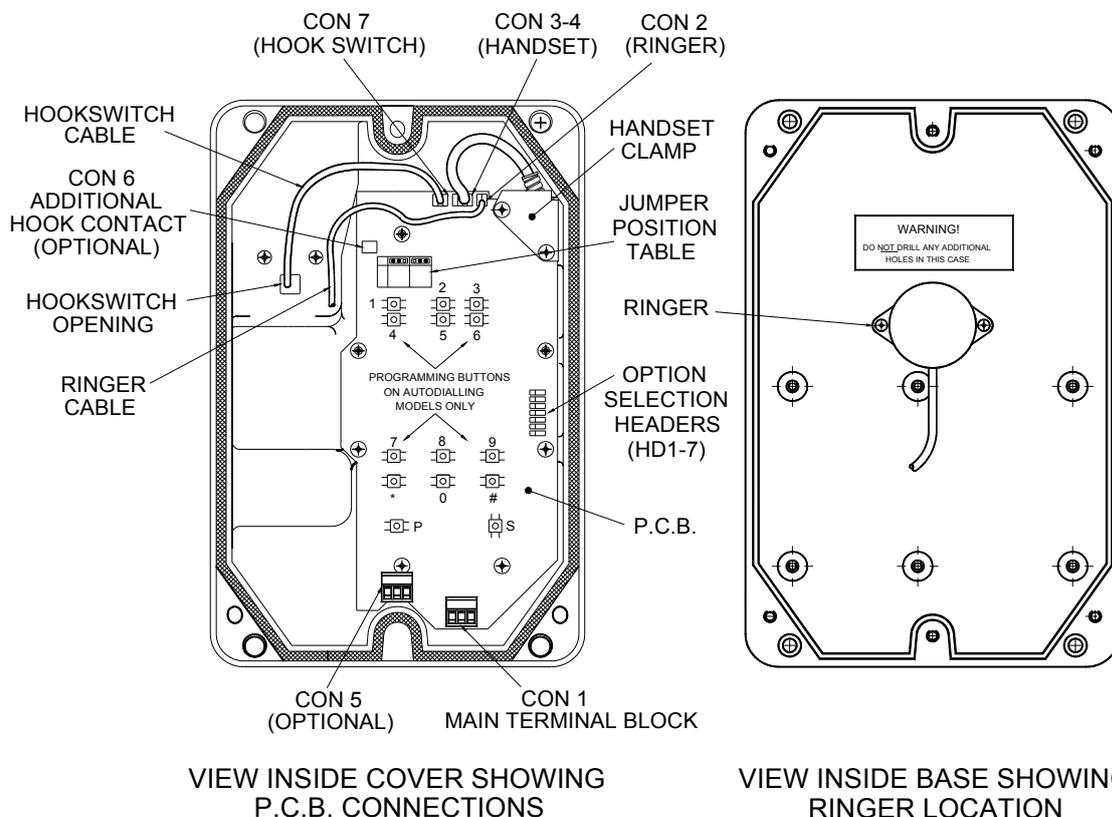
2.   To prepare for installation, undo the three retaining screws shown to remove the front casing from the rear. The screws are captive in the

front casing; a 5mm Allen key is required. Disconnect the ringer connector from the circuit board, noting the position and orientation.

3.   The Commander telephone can be installed vertically to a wall or pole, or used horizontally on a desk. Select the required mounting method (section 5) and mount the rear casing first where applicable.

4.   Route the required cables through glands as appropriate, and make connections following section 6.

5.   Make the appropriate option settings, and program any required auto-dial numbers, following section 7.

6.   Reconnect the ringer. Re-secure the telephone Front Casing to the Rear Casing with the three retaining screws, ensuring a weatherproof seal.

7.   Test the operation of the telephone (section 3). Installation is now complete.

5.   Mounting methods and dimensions

5.1. General

IMPORTANT

Installation details differ between the TITAN and COMMANDER product ranges –please make sure you know which product you are installing and refer to the appropriate sections below.

Before mounting the telephone, check the cable routing and requirements. If glands are required, fit them 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 for an additional hook contact).

2.   Select the appropriate sized gland:
Use the smaller gland for cables diameters 4 - 7mm.
Use the larger gland for cable diameters 8 - 13mm.

3.   From the outside of the case, insert the selected gland into the threaded cable entry hole and tighten, so that its sealing washer is compressed against the enclosure surface.

4.   Proceed with chosen mounting method below
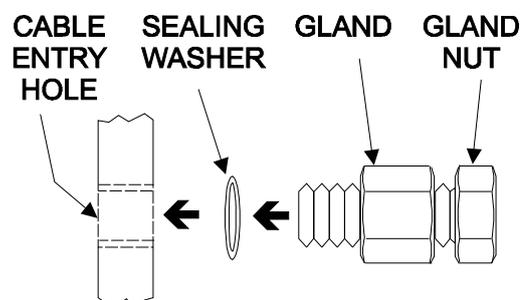
5.2. Titan

As standard, Titan with rear enclosure is supplied with 2 cable glands with sealing washers, 4 countersunk screws with wall plugs and a 3mm Allen key.

Titan telephones supplied for flush mounting have no rear enclosure – see section 5.2.3 below.

5.2.1   Wall mounting
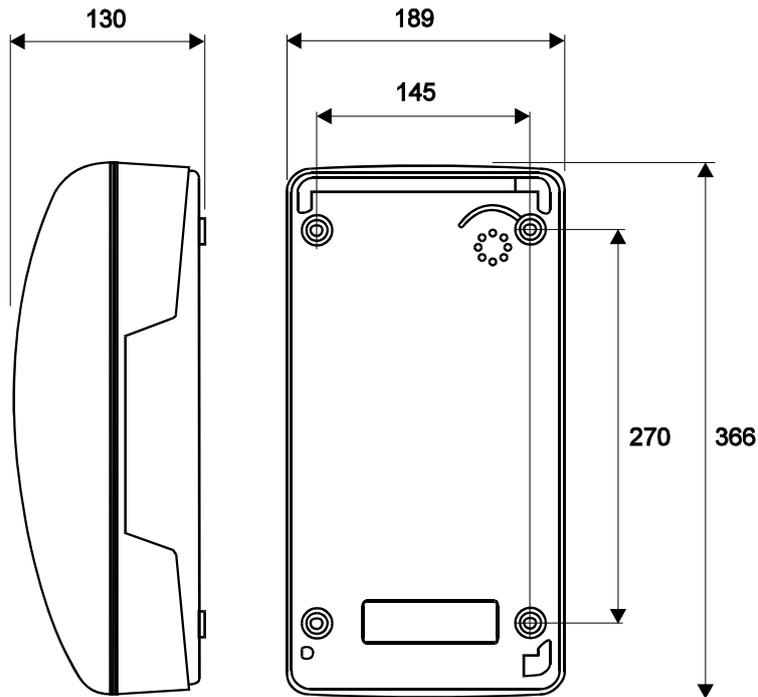
1. Using a suitable tool, punch out the 4 holes in the rear enclosure, taking care not to damage or dislodge the plastic bushes. Only four of the eight holes are required - the outer ones are recommended. The inner holes are provided to be compatible with older-style mounting posts, and should be left intact if not used. If the inner holes are used they must be fitted with the supplied plastic bushes.

WARNING:.*Your warranty will be invalidated if :-*
1. Any fixing hole made in the rear enclosure is left unused.
2. Any additional holes are drilled into the telephone enclosure.
3. Plastic bushes are not used on all fixing holes.

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2. Mark the wall with hole centres based on the dimensions shown (145 x 270mm). If necessary offer the rear enclosure up to the wall to check alignment. Do not use the enclosure as a template for drilling.

3. Drill holes in the wall on the marked positions. Select appropriate screws, wall plugs etc., for the type of wall, bearing in mind that the weight of the complete phone is around 5kg.

IMPORTANT: **USE ONLY** *countersunk-headed fixing screws. Check that screws seat properly in the plastic bushes to ensure a watertight seal. Do not use excessive tightening force, as this may crack the case.*
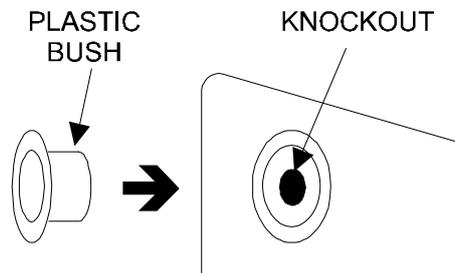
4. Ensure that all four plastic flanged bushes are in place and the rear enclosure is screwed tightly to the surface to prevent any water ingress through the punched holes.

5. Complete the installation by making the appropriate connections (section 6) and re-fitting the face plate.

5.2.2   Pole mounting
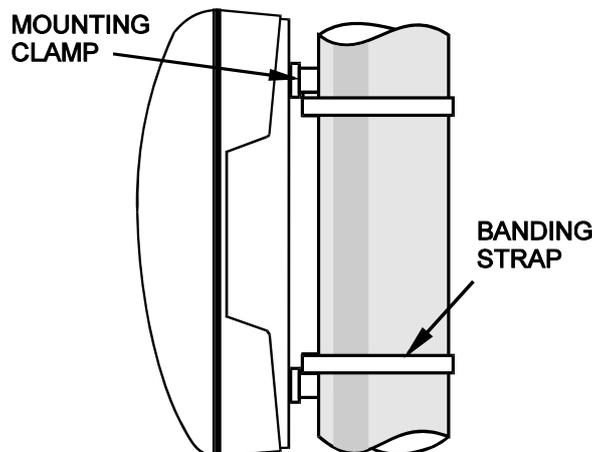
Kit No 100-02-0208-001

This accessory is for mounting GAI-Tronics telephones on to the side of round poles of 100mm to 200mm diameter, or on to square or rectangular section uprights of 100mm to 150mm across the mounting surface.

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, refer to GAI-Tronics.

1. After punching through the flanged bushes in the rear enclosure (as described in **WALL MOUNTING**), attach the pole mounting clamp

assemblies to the rear enclosure using the M6 x 25 screws provided. Tighten to a torque of 4.5Nm max.
Note: only use the outer four holes, and ensure that the screws seat properly in the plastic bushes to avoid water ingress.

2. Ensuring that the glands are at the bottom, pass a proprietary banding strap round each of the pole mounting clamps and the support pole. Tighten securely.

3. Continue the installation by making the appropriate connections (section 6) and re-fitting the face plate.

4. Re-tighten the straps firmly and trim off any excess band material. For security the driving head of the band may also be sawn off.

5.2.3   Flush mounting

Titan telephones supplied for flush mounting have a slightly different faceplate to those supplied with a rear enclosure – in particular the fixing holes are in different positions and there are no corner cut-outs (for door hinges). These models are usually described as "Titan fp" and the supplied mounting kit contains round-headed screws and no glands.
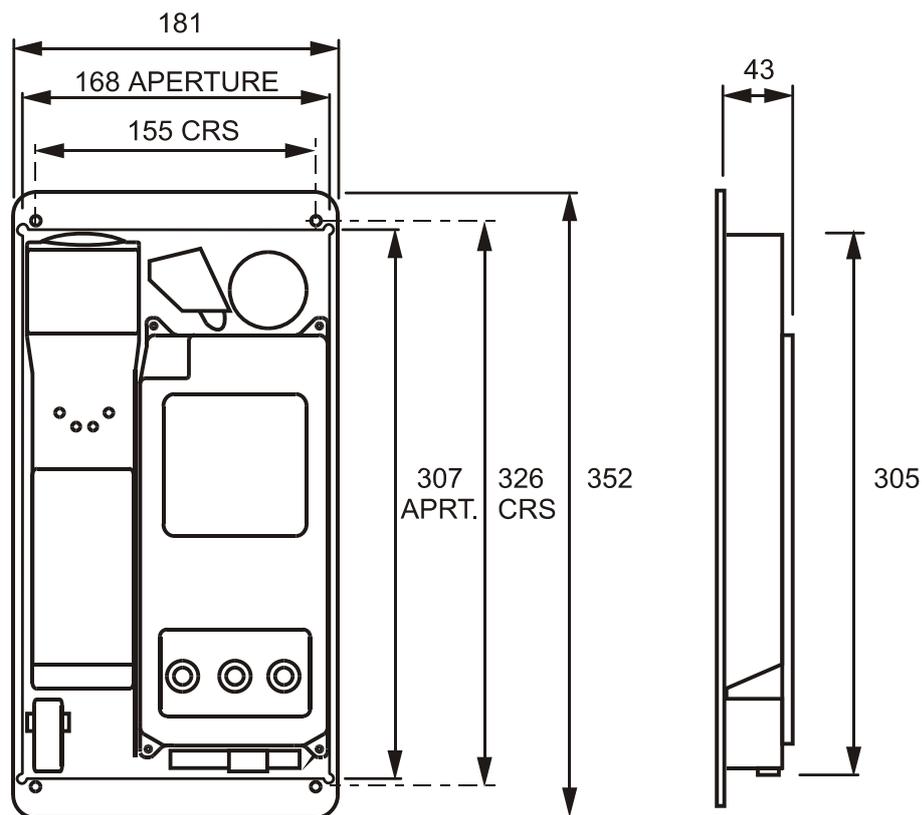

To flush-mount the telephone to a wall:

1. Prepare a recess (at least 50mm deep) in the wall according to the dimensions shown.

2. Mark the wall with hole centres based on the dimensions shown (155 x 326mm). If necessary offer the faceplate up to the wall to check alignment. Do not use the telephone as a template for drilling.

3. Drill holes in the wall at the marked positions. Select appropriate screws, wall plugs etc., for the type of wall, bearing in mind that the weight of the complete phone is around 1.5kg.

4. Route the cable to within the recess, and make connections to the telephone as shown in section 6.

5. Secure the telephone to the wall taking care not to trap any wires. Note that the gasket on the rear of the faceplate is intended to make a weather seal when compressed against a smooth surface. Do not rely on this gasket to keep water out if mounting directly to rough surfaces such as brickwork – in these cases use additional sealant around the edges to ensure a weatherproof seal.

5.3. Commander
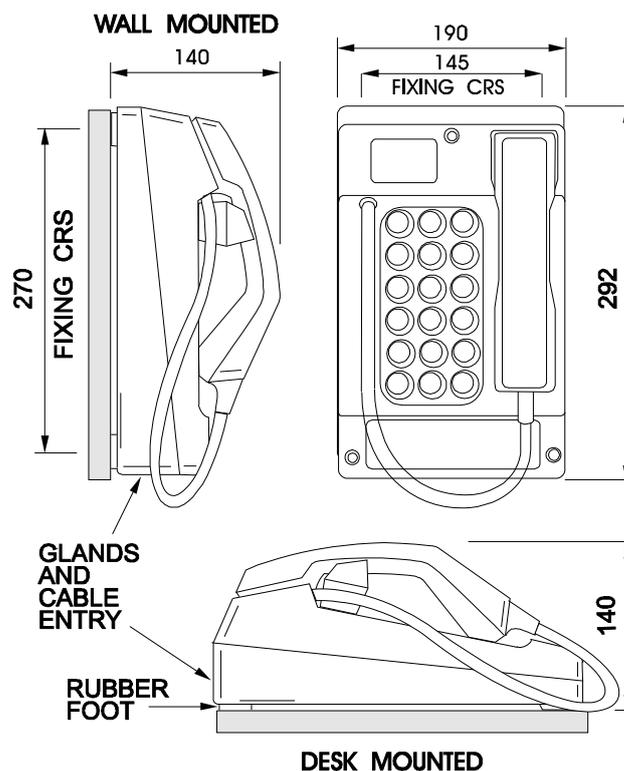
5.3.1 Wall mounting

To ensure weatherproof integrity when wall mounted, external cables should enter the enclosure from the bottom via the 20mm gland entries provided.

IMPORTANT:

Do not drill any extra holes as this will invalidate your warranty.

1. Remove rubber feet from the Rear Casing if fitted. Ensuring that the cable entries are at the bottom offer the Rear Casing up to the vertical surface and mark through the fixing holes.
   Do not use the Rear Casing as a template to drill the holes. Work only from the marked positions.

2. Drill the holes in the vertical surface to suit the best method of fixing.

3. Ensure the Rear Casing is securely attached to the vertical surface using the four 7mm diameter screw holes provided. No sealing washers are necessary.


IMPORTANT: *Do not use countersunk headed fixing screws. Only use round head, socket cap head or pan head screws. Take care not to over tighten the screws, doing so may damage the case and will invalidate your warranty.*

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4. Continue the installation by making the appropriate connections (section 6).

5. Reconnect the ringer. Secure the telephone Front Casing to the Rear Casing.

5.3.2 Pole mounting

Kit No 100-02-0208-001

This accessory is for mounting GAI-Tronics telephones on to the side of round poles of 100mm to 200mm diameter, or on to square or rectangular section uprights of 100mm to 150mm across the mounting surface. For flat mounting on surfaces greater than 150mm across use the desk or wall mounted methods as appropriate.
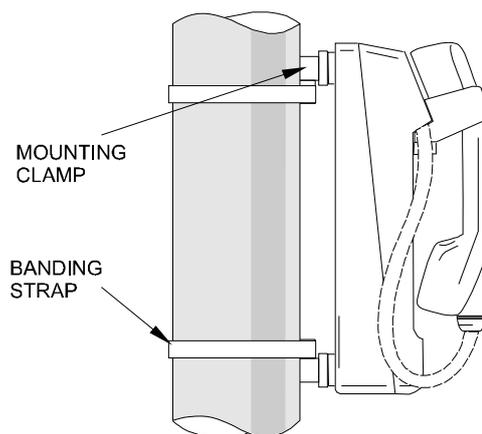

MOUNTING CLAMP

BANDING STRAP

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, refer to GAI-Tronics.

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1. Remove rubber feet from the Rear Casing if fitted. Attach the pole mounting clamp assemblies to the Rear Casing using the M6 x 25 screws provided. Tighten to a torque of 4.5Nm max.

2. Ensuring that the glands are at the bottom, pass a proprietary banding strap round each of the pole mounting clamps and the support pole. Tighten securely.

3. Continue the installation by making the appropriate connections (section 6).

4. Reconnect the ringer. Secure the telephone Front Casing to the Rear Casing.

5. Re-tighten the straps firmly and trim off any excess band material. For security the driving head of the band may also be sawn off.

5.3.3   Desk mounting / Rake

For horizontal surfaces greater than 150 x 280mm use the free-standing desk mounted method below.
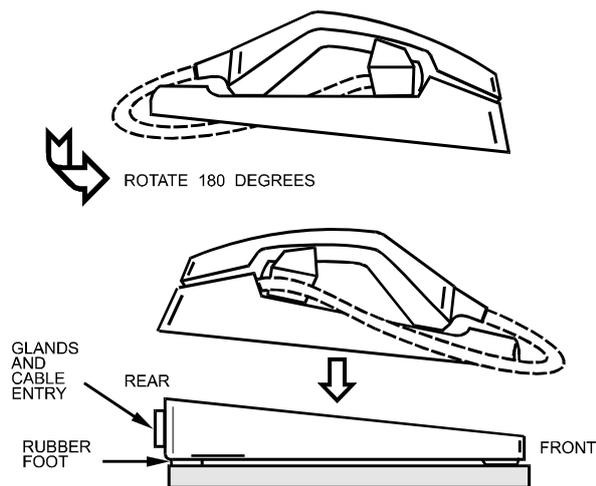
To provide a 'rake' for convenient operation, the Front Casing may be turned through 180° before it is fitted to the Rear Casing. Thus the cable entries are at the rear of the telephone.

1. Ensure that the supplied rubber feet are fitted to the underside of the Rear Casing.

2. Rotate the Front Casing through 180° taking care not to trap any wires.

3. Continue the installation by making the appropriate connections (section 6).

4. Reconnect the ringer. Secure the telephone Front Casing to the Rear Casing.

6. Connections

If glands are used, insert the cable through the gland body and tighten the gland nut sufficiently to clamp the cable, making a seal. For Titan models with rear enclosure, ensure sufficient cable is left to allow removal of the faceplate without straining the cable.

REAR ENCLOSURE   GLAND   GLAND NUT
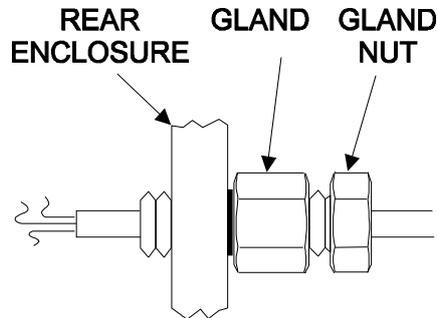
IMPORTANT: If only one gland entry is used, the blanking plug fitted to the second gland position must be left in place.

6.1. Standard connections

Connect the telephone line A and B to the main terminal block CON1 as shown.

Titan

$$A \doteq B$$

Commander

CON 5 (OPTIONAL)   CON 1 MAIN TERMINAL BLOCK

CON 5 OPTIONAL   CON 1 MAIN TERMINAL BLOCK
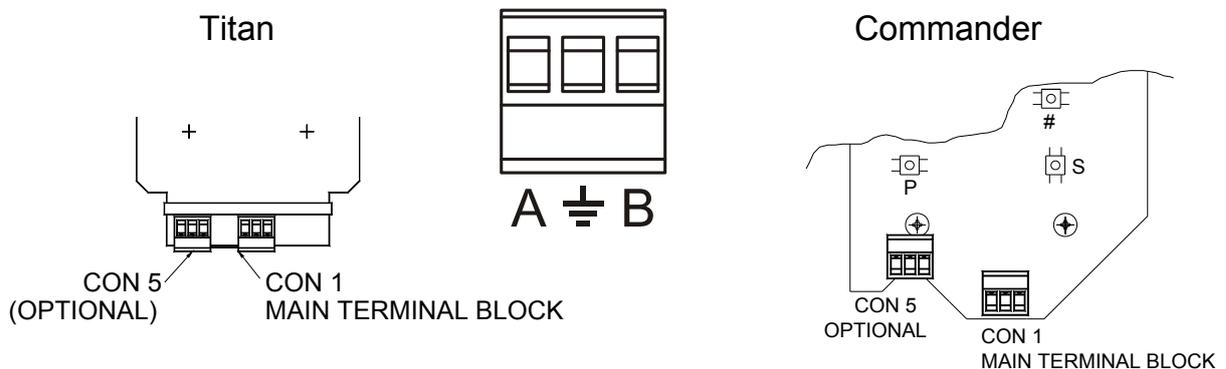
The centre earth terminal is intended as an optional connection to a local earth for the purpose of enhanced protection from lightning transients, and is not required in terms of user safety from the telephone network.

Note: Conductor sizes to be 0.5mm-2.5mm^2 (flexible cable);0.5-4.0mm^2 (solid cable) The terminal block can be disconnected from the circuit board for easier installation

Cabling must not infringe European Low Voltage Directive (LVD) 73/23/EEC.

6.2. Additional hook contact

Note – this optional connection is only available if specifically ordered. Contact GAI-Tronics for details.

The additional hook contact is provided on CON5. The diagram shows the state of the changeover contacts when the telephone is on hook. These contact labels are also on the circuit board.

The switch is operated by the presence of the handset on its cradle. It is a voltage-free switch providing functional and basic insulation from the telephone network. It is intended to be connected to a TNV-3 or SELV circuit as defined by EN 60950-1:2001.

Switch maximum ratings (resistive load):

50 Vrms

100 VDC

300mA

3W

N/C C/O N/O
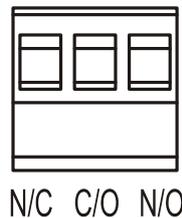
The circuit is not fused.

It is recommended that the switch cabling is routed via the spare gland in the case.

7. Programming and Option Settings

Note – for Titan models, the plastic backbox must be removed for access to the programming keypad and option settings. When replacing the backbox, take care to seat the cables correctly in their channels as shown.

ADDITIONAL HOOK
SWITCH CABLE
(CHANNEL 4)
OPTIONAL

RINGER CABLE
(CHANNEL 3)

HOOK SWITCH CABLE
(CHANNEL 2)

HANDSET CABLE
(CHANNEL 1)
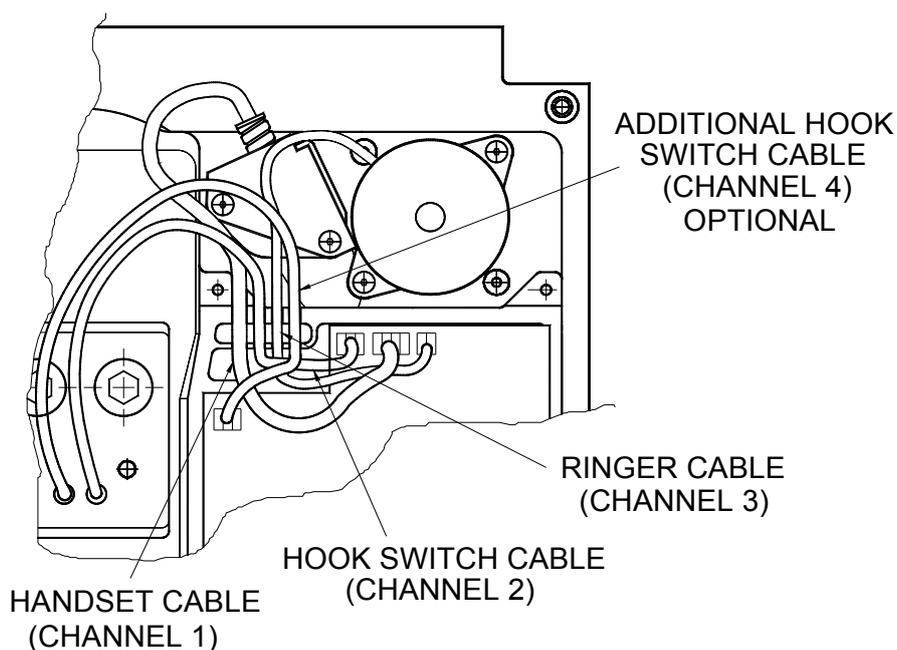
7.1. Auto-dial Programming

To program an auto dial memory number, the telephone must be connected to a telephone line and the S button must be configured as the 'Store' function (see 7.3.3). The procedure is then:

- Lift the handset

- Press S

- Enter the required number using the numeric keypad

- Press S again

- Press the required memory button for the auto-dial

- Replace the handset.

A pause (approximately 1 second) can be included in the memory number by pressing the P button (or LR key) during programming.

The maximum number of digits per auto dial button is 24, including any pauses.

Note that, with the exception of 18 button models, the programming buttons are internal, ie on the circuit board on the reverse side to the memory buttons.

On 18 button models, the S button can be returned to the 'Mute' function if required to prevent unauthorised reprogramming. (See 7.3.3)
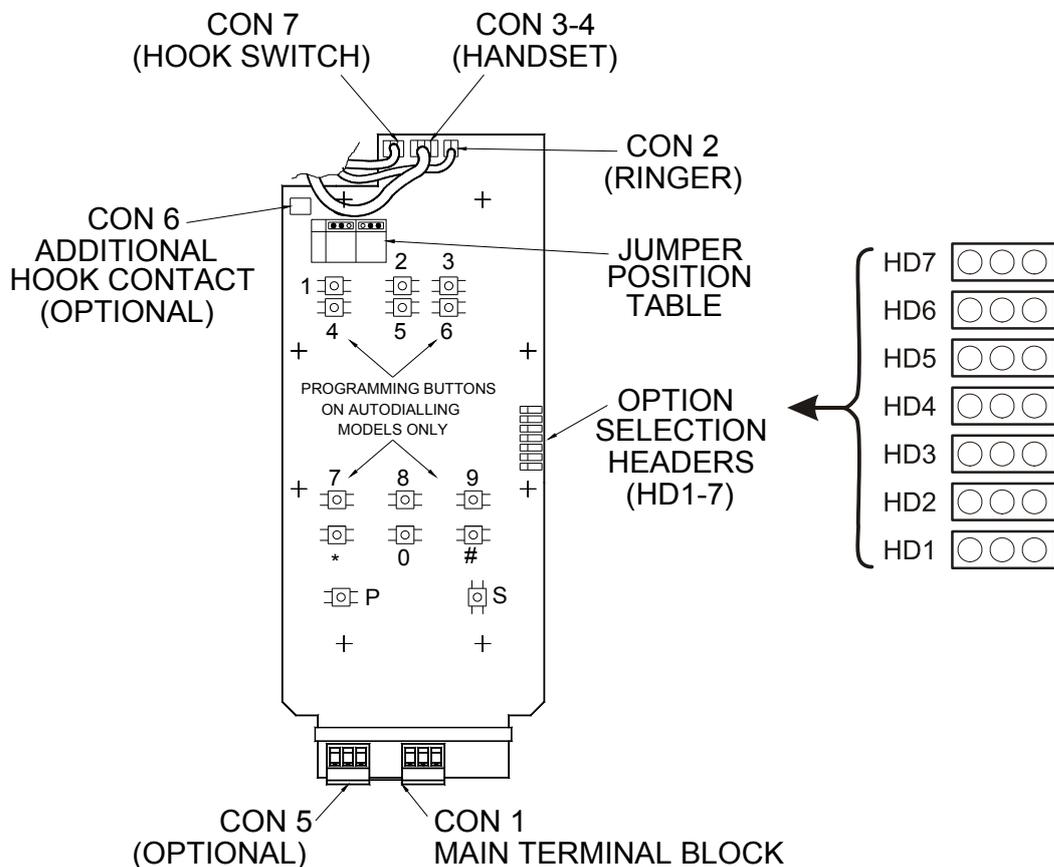
7.2. Hot Dial programming

If the phone is configured with the Hot Dial option, the programming procedure is as above but without pressing an auto-dial button, ie

- Lift the handset

- Press S

- Enter the required number using the numeric keypad

- Press S again

- Replace the handset.

The maximum number of digits is 24 including pauses. Pauses are entered by using the P button.

Note: the Mute Before Dial option (section 7.3.4) must always be enabled for the HOT Dial option to function correctly.

7.3. Option Setting

All user-configurable options are set by the positions of 7 jumpers on headers on the circuit board, labelled HD1 – HD7 (see diagram on page 19).

7.3.1 Summary – jumper position table

	●●○	○●●
HD7	TIMER	-
HD6	MUTE	STORE
HD5	MBD	-
HD4	3:2	2:1
HD3	LD	DTMF

TBR SETTINGS (msec)

HD2 \ HD1	○●●	●●○
○●●	100	250
●●○	N/A	75

7.3.2 Call Timer

The call timer is set to ON or OFF by HD7 – with the jumper to the left the timer is ON, with the jumper to the right (or missing) the timer is OFF. When ON, the timer forces the phone back off line after the preset time (between 6 and 7 minutes). This prevents the line remaining tied if the handset is left off-hook. The timer is factory-set to OFF by default.

7.3.3 S button function

The function of the S button (if fitted) is set by HD6 – with the jumper to the left the button acts as secrecy or MUTE, with the jumper to the right

(or missing) the button acts as the STORE button for programming. The function is factory set to STORE by default.

Note: on 18 button versions it may be desirable to set this option to MUTE for telephones in public areas, to prevent unauthorised reprogramming.

7.3.4   Mute Before Dial

The mute before dial function is set by HD5 – with the jumper to the left MBD is ON, with the jumper to the right (or missing) MBD is OFF. When ON, the function mutes the microphone on outgoing calls until dialling has occurred. This is usually used on auto dial telephones to prevent the dialling of unauthorised numbers by the use of a tonepad. Note that this function must be set to ON for hot-dial phones. The function is factory set to ON by default.

7.3.5   Mark / Space ratio

When pulse dialling is selected (section 7.3.6), the mark/space ratio is set by HD4 – with the jumper to the left it is set to 3:2, with the jumper to the right (or missing) it is set to 2:1. Note that this jumper has no function if the phone is set for tone dialling. The ratio is factory set to 2:1 by default.

7.3.6   Tone or Pulse dialling

The dialling mode can be set to DTMF (tone) or pulse (LD) by HD3 - with the jumper to the left it is set to LD, with the jumper to the right (or missing) it is set to DTMF. The dial mode is factory set to DTMF by default.

7.3.7   Recall break length

The length of the line break caused by pressing the R button (if fitted) is set by HD1 & HD2 as shown below:

TBR SETTINGS (msec)

HD2 \ HD1	○ ● ●	● ● ○
○ ● ●	100	250
● ● ○	N/A	75

The recall break length is factory set to 100ms by default.

8. 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 9000-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.

Contact GAI-Tronics for details. www.gai-tronics.co.uk

9.   Technical Specifications

Operational Requirements	
Systems.	• Analogue Public Switched Telephone Network (PSTN) • Private Automatic Branch Exchange (PABX) • Railway infrastructure concentrator.
Not suitable for connection to:	• Payphone extensions • Public Emergency Telephone System (PETS)
Telephone line parameters	• Ring Voltage: 30V to 100V rms, 20Hz to 50Hz • Line voltage 20 to 70 Vdc • Loop current $\geq$ 15mA
Note: these telephones have been designed for pan-European single terminal connection to the PSTN. However, due to differences between the individual PSTNs & PABXs provided in different countries, this does not, of itself, give an unconditional assurance of successful operation on every PSTN or PABX termination point.	

Product features	
Power supply	100% line power.
Hookswitch	Electronic with no external moving parts
Time Out	7 minutes (±1). Selectable
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: -20ºC to +60ºC Storing: -40ºC to +70ºC
Relative Humidity	Up to 95% (non-condensing)
Ingress Protection	IP65. (Titan with door closed IP66) to EN60529:1992 – Degrees of protection provided by enclosures.

Physical characteristics	
Casing material	Die-cast Aluminium (Titan) Glass reinforced polyester (Commander)
Handset Material	Cycoloy (2850) with stainless steel or polyester curled cord.
Weight	3 –5kg depending on option.
Dimensions	Dependant on model and variant. See 5.1 (Titan) or 5.3 (Commander)

Compliance to standards

European Directive	1999/5/EC – European Radio & Telecommunications Terminal Equipment Directive.	CE
EMC	EN55022:1998 – Information technology equipment. Radio disturbance characteristics.	
	EN55024:1998 – Information technology equipment. Immunity characteristics.	
	EN 50121-4: 2000 - Railway applications, emission and immunity	
	RT/E/S/30003 iss1 1999 – The performance of Telecommunications Equipment under Conditions of Electrical Interference	
Safety	EN60950-1:2001 – Specification for information technology equipment, including electrical business equipment.	
Telephony	ETSI TBR21: Jan 1998	
	ETSI TBR38: May 1998	
Lightning and transients	ITU-T recommendation K.21 (10/2000) - Enhanced surge protection.	

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.	

10. CE Declaration

Declaration of conformity

In accordance with European directive 1995/5/EC (R&TTE)

We, GAI-Tronics, a division of Hubbell Limited, of Brunel Drive, Stretton Park, Burton upon Trent, Staffordshire, England, DE13 0BZ, declare under our sole responsibility that the following product is in conformity with the directives and standards listed below and hold the relevant technical documentation at the above address.

Product description	Commander FD/AD (1065) Titan FD/AD (1066)

EC Directive	Standards applicable under the Directive
1999/5/EC Directive (R&TTE) European Radio & Telecommunications Terminal Equipment	EN 55022:1998 Information Technology Equipment (EMC) EN 55024:1998 Information Technology Equipment (EMC) EN 60950-1:2001 Information Technology Equipment Safety

Date of issue	Name/Title of authorised signatory	Signature of signatory
18 – March – 2005	G. R. Lines Business Unit Manager	

QC 300 / 8

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The policy of GAI-Tronics is one of continuous improvement, therefore the Company
reserves the right to change specifications without notice