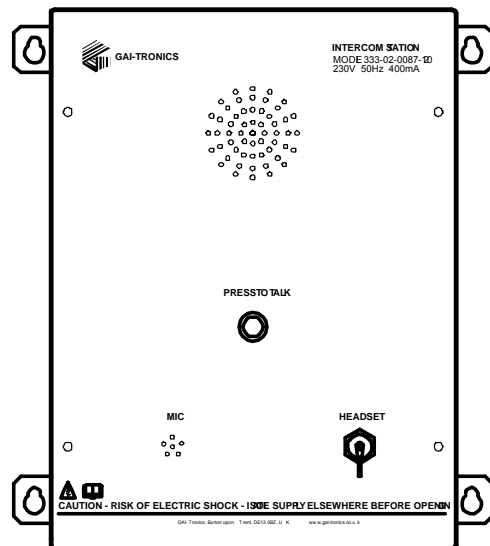
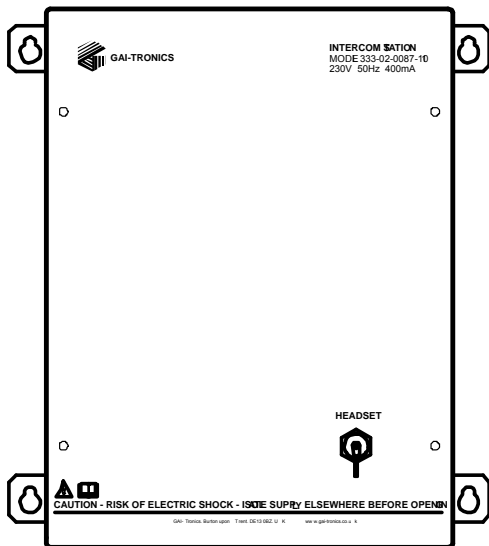


GAI-TRONICS

A division of Hubbell Ltd.

Crane Intercom System (With Headset Option)



OPERATION & TECHNICAL MANUAL

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OPERATION & TECHNICAL MANUAL

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1. Essential Safety Information

IMPORTANT

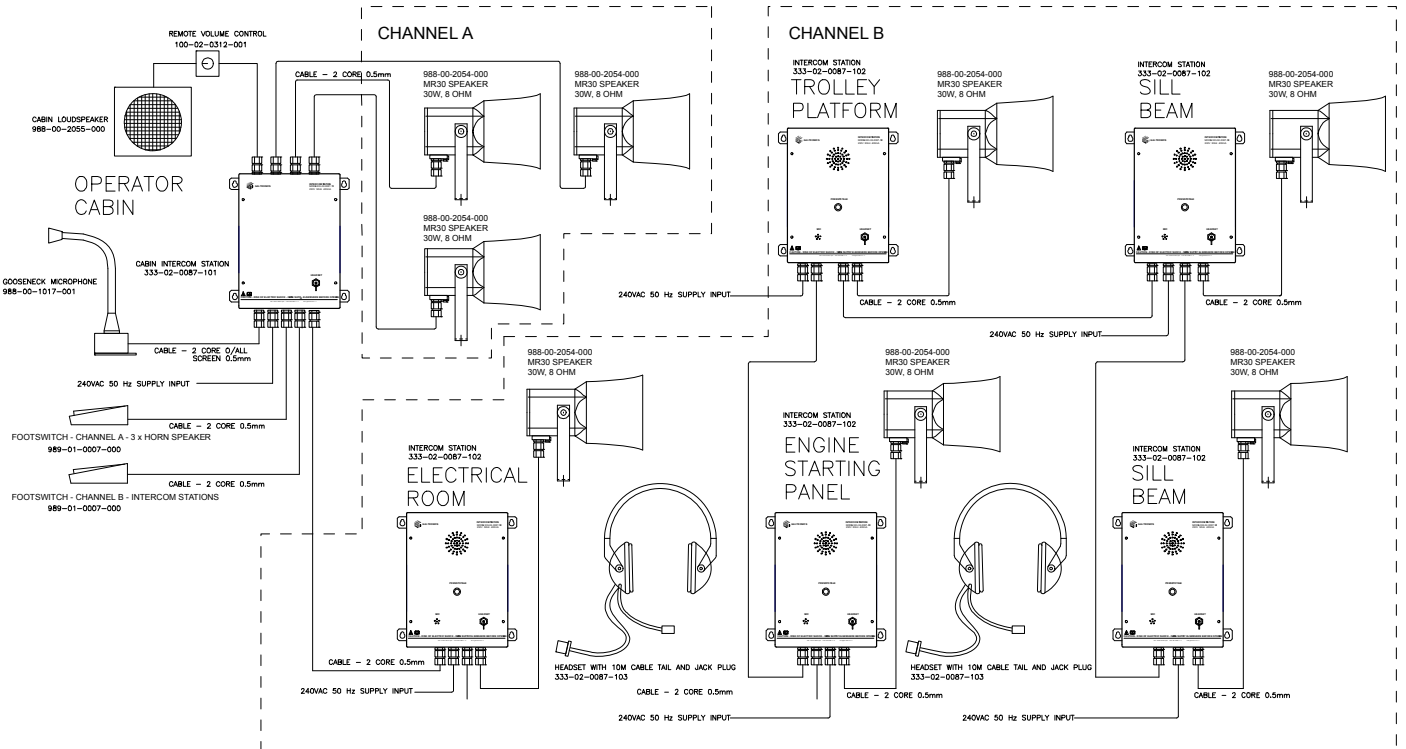
- ♦ This equipment contains hazardous voltages.
- ♦ Mains supply must be isolated elsewhere before opening the case.
- ♦ Installation and maintenance must only be carried out by qualified personnel.
- ♦ The equipment must be earthed.
- ♦ Cabling and connections must be in accordance with local electrical safety regulations (such as BS7671 16th edition IEE regulations).
- ♦ Mains connection must be made via a double-pole, max. 6A fused, isolating switch.
- ♦ Only replace the internal mains fuse with the correct type: 20x5mm HRC 3.15A Anti-Surge.
- ♦ It is essential that the integrity of the earth bonding connection between the rear enclosure and the front panel is maintained.
- ♦ All possible measures must be taken to ensure water, fluid or dust does not contaminate the internal components of the intercom station whilst unpacking, preparing and installing the unit in inclement weather conditions or by negligence.

Failure to do so may result in an unsafe condition and invalidate your warranty.

- ♦ The unit is heavy (~10kg). Adequate precautions must be taken when lifting and installing to prevent injury. Fixings must be selected to ensure that the unit remains firmly in place.

2. System Description and Operation

A typical system configuration is shown below (a larger version of this diagram is reproduced at the end of this manual).



The system is based on the GAI-Tronics 1058 series of intercom products and is intended to provide voice communication between the crane cab and 2 separate channels: channel A being up to 3 high power speakers mounted externally next to the boom or lifting head, channel B being a string of 5 intercom stations mounted at various locations on the crane. All the stations on channel B can communicate with each other (as well as to the crane cabin), but only the crane cabin can broadcast to the external speakers.

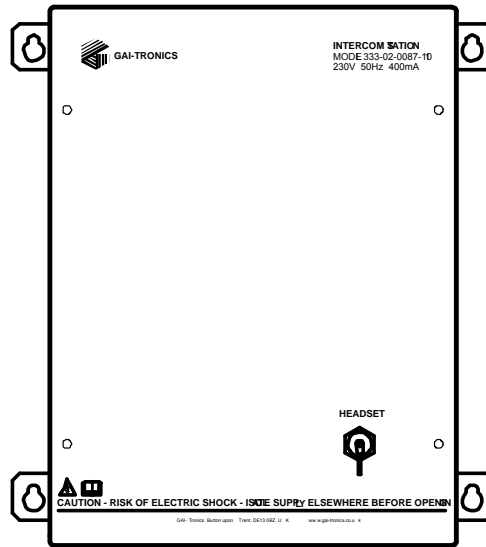
All stations are potentially in a high-noise environment. Each station is therefore provided with a headset facility, and the 5 stations outside the crane cabin are also provided with additional high power loudspeakers.

The components of the system are:

Item	GAI-Tronics part number
Crane Cabin Intercom unit	333-02-0087-101
General Intercom unit	333-02-0087-102
Headset (including 10m cable extension)	333-02-0087-103
In line volume control	100-02-0312-001
Cab speaker	988-00-2055-000
Stem mic (150mm)	988-00-1017-001
Footswitch	989-01-0007-000
External loudspeaker	988-00-2054-000

Operation of the major components is detailed below.

2.1. Cabin Intercom Station 333-02-0087-101



The cabin station has the following features and operation:

- No panel-mounted microphone, speaker or button
- Headset socket with protective cap (Bulgin micro Buccaneer 400 series)
- 9 x 16mm glands providing cable entry for:
 - Power
 - Gooseneck microphone
 - 2 x footswitch (1 for channel A, 1 for channel B)
 - Local cabin speaker (3W)
 - 3 x high power loudspeaker (30W each)
 - Audio line to channel B

With no footswitches pressed, and no headset plugged in, the unit will receive audio from the channel B line and play it through the local cabin speaker. An external in-line volume control (100-02-0312-001) is normally provided with the system.

The unit is semi-duplex: a push-to-talk switch must be activated in order to transmit, and the cabin speaker is muted whilst transmitting.

Pressing footswitch A enables broadcast over the 3 high power loudspeakers. An internal volume control is provided.

Pressing footswitch B enables transmission to all stations on channel B.

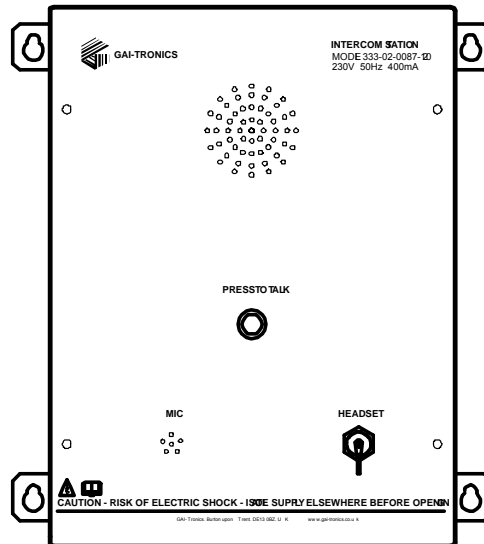
If a headset is plugged into the socket, the gooseneck microphone and cabin speaker are disabled - audio can only be received or transmitted via the headset.

If the headset PTT button is not being pressed, the headset receives audio from the channel B line.

Pressing the PTT button on the headset enables transmission to channel B stations only.

While the headset is plugged in, the footswitches still operate as before - i.e. footswitch A will broadcast to the high power loudspeakers and footswitch B will transmit the channel B line, both from the headset microphone. When the headset is plugged in, its PTT button has the same function as footswitch B.

2.2. General Intercom Station 333-02-0087-102



The intercom station has the following features and functions:

- Integral 3W loudspeaker
- Integral panel microphone
- Push to talk button
- Headset socket with protective cap (Bulgin micro Buccaneer 400 series)
- 4 x 16mm glands providing cable entry for:
 - Power
 - 2 x Audio line to channel B
 - 1 x high power loudspeaker (30W)

With no headset plugged in, the unit will receive audio from the channel B line and play it through its integral speaker and an external high power loudspeaker if connected. An internal volume control for the external speaker.

The unit is semi-duplex: the push-to-talk switch must be activated in order to transmit, and the speakers are muted whilst transmitting. This will prevent local feedback.

Pressing the PTT button enables transmission to all stations on channel B, including the crane cab.

If a headset is plugged into the socket, the integral microphone and speaker are disabled - audio can only be received or transmitted via the headset.

If the headset PTT button is not being pressed, the headset receives audio from the channel B line.

Pressing the PTT button on the headset enables transmission to channel B stations only.

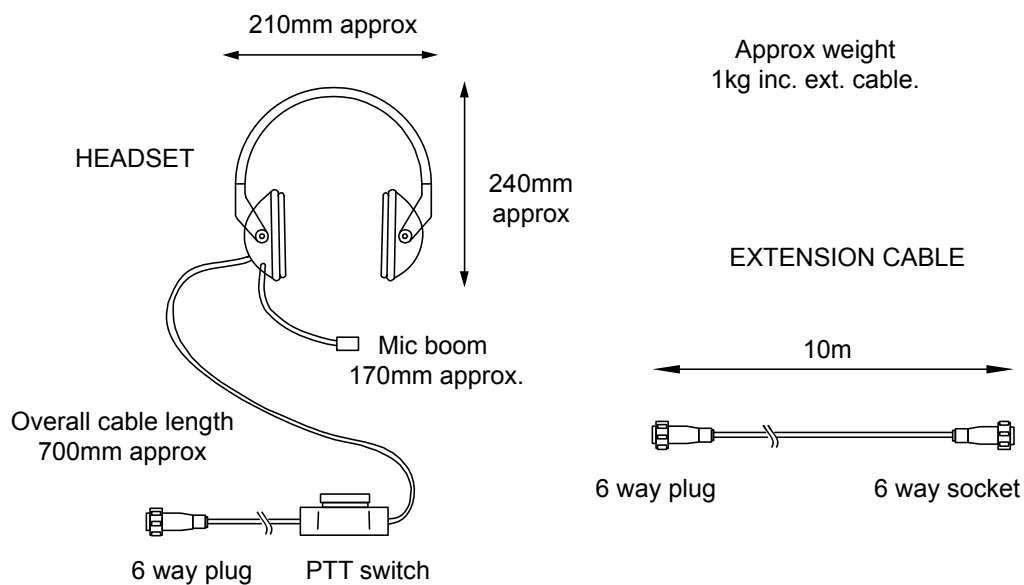
GAI-TRONICS

While the headset is plugged in, the PTT button on the unit panel will still operate as before - i.e. it will enable transmission to the channel B line, but from the headset microphone.

2.3. Headset 333-02-0087-103

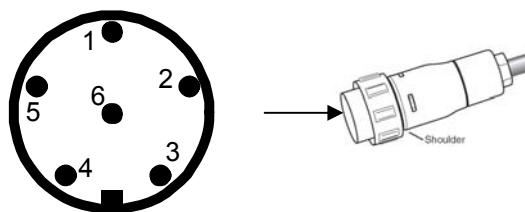
Rugged industrial headset featuring:

- VK ear muffs
- Electret boom microphone
- 700 mm straight cable
- Heavy-Duty inline PTT with metal clip
- Bulgin 6 pole connector
- 10m extension tail included, fitted with 6 pole Bulgin connectors both ends



Connections (viewed from plug connector face):

1. Microphone
2. PTT
3. Linked to 4
4. Linked to 3
5. Speaker
6. 0V (common)



3. Installation

3.1. Intercom Stations

Please refer to drawing 333-00-0087-101 (for the cabin station) or 333-00-0087-102 (for the general station) appended to the end of this manual. The installation method is the same for both types, but connections differ - see below.

All possible measures must be taken to ensure water, fluid or dust does not contaminate the internal components of the intercom station whilst unpacking, preparing and installing the unit in inclement weather conditions or by negligence.

Failure to do so may cause an unsafe condition and invalidate your warranty.

The intercom unit should be secured to a vertical flat surface using the 4 mounting holes provided.

Mark the wall with hole centres, if necessary offer the rear enclosure up to the wall to check alignment. Do not use the enclosure as a template for drilling.

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 unit is around 10kg.

WARNING: *Your warranty will be invalidated if any holes are drilled into the enclosure.*

The front panel is secured by 4 x M6 screws.

IMPORTANT

Make sure the mains supply to the unit is isolated before opening the front panel.

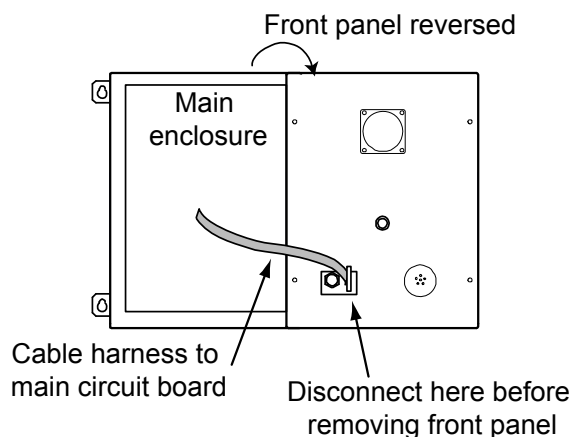
IMPORTANT

A cable harness runs between the front panel and the main circuit board in the main rear enclosure.

Take care to disconnect this harness (at the small circuit board behind the headset socket) if the front panel is to be completely removed from the unit during installation. Do not allow the front panel to hang from the cable harness.

There is also an earth strap to the front panel, which should similarly be disconnected if the front panel is to be completely removed.

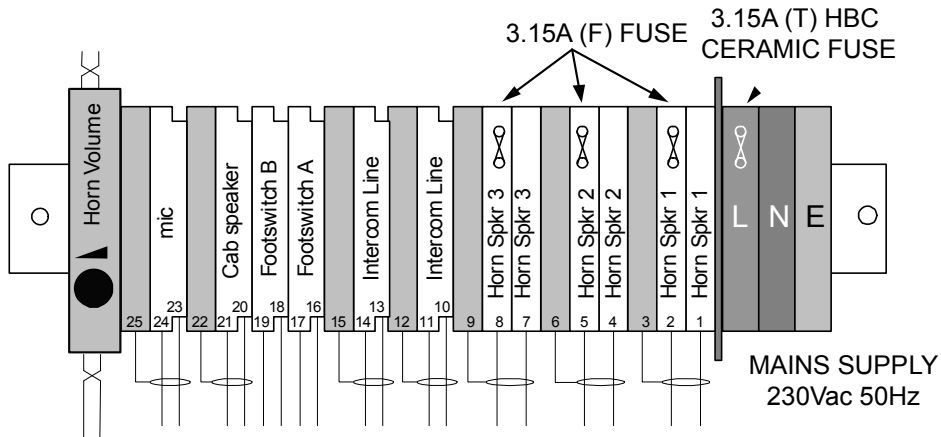
As an aid to installation, the front panel can be reversed and temporarily secured on 2 of the front panel fixings as shown.



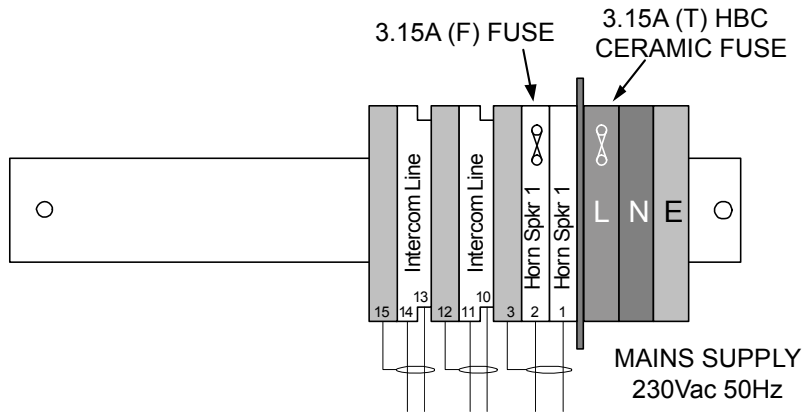
Feed cables through the glands and connect to the terminal as shown.

Take care to maintain the integrity of the glands when fitting cables, to preserve the seal.

Cabin Intercom connections:



General Intercom connections:



IP66 glands are provided in the bottom of the intercom enclosure – one for each cable shown.

Cables:

Mains (230Vac, 50Hz): min 0.8mm².

NB - Mains supply must be connected via a dual pole, fused, isolating switch or device, with a maximum rating of 6A.

The intercom unit must be earthed to a mains safety earth.

Speaker cables (cab speaker and horn speakers): min 1.5mm² individually screened twisted pair.

Intercom line: min 1.5mm² individually screened twisted pair.

Microphone: min 0.25mm² individually screened twisted pair.

Footswitches: min 0.25mm² twisted pair.

Mains and signal wiring should be kept segregated observing the requirements of EN60950.

Terminals:

All terminals will accept cable sizes from 22awg to 12awg.

Intercom line terminals are linked to allow loop-in loop-out.

Mains fuse: 3.15A(T) ceramic HBC type (20x5mm).

Speaker fuses: 3.15A(F) type (20x5mm).

3.2. Microphone 988-00-1017-001

The cab microphone should be fixed to a suitable flat surface using the 3 mounting holes in the base provided. Cabling should be via twin core screened cable to the terminals shown on the wiring diagram, maximum distance 3m.

3.3. Footswitch 989-01-0007-000

Two footswitches are provided with the cabin intercom station. The normally open contacts should be connected to the terminals shown on the wiring diagram, maximum distance 3m.

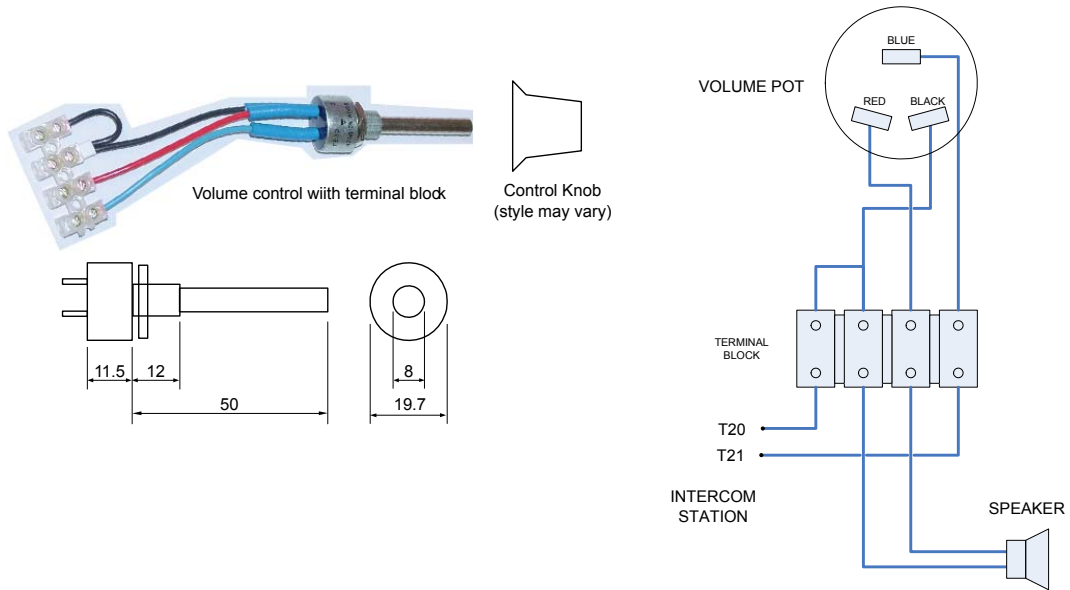
3.4. Cab speaker 988-00-2055-000

The cab speaker should be mounted in a convenient position in the cab and connected through the in-line volume control as shown on the wiring diagram below.

Note that only low impedance speakers (8Ω) are suitable for connection to the in-line volume control and intercom station.

Cabling to the cab speaker and in line volume control should be a twisted pair of min 0.5mm² cable, maximum distance 5m.

3.5. In-line volume control 100-02-0312-001



The in-line volume control should be mounted through a panel and connected between the cabin intercom station and the cab speaker as shown above and on the wiring diagram. A control knob is provided.

Note that only low impedance speakers (8Ω) are suitable for connection to the in-line volume control and intercom station.

Cabling to the cab speaker and in-line volume control should be a twisted pair of min 0.5mm² cable, the total distance between speaker, volume control and intercom station should be no longer than the stated 5m.

Note: adjusting this control to its minimum will mute the audio from the cabin speaker. Take care not to adjust this control to zero.

3.6. External horn speakers 988-00-2054-000

External horn speakers should be fixed securely in place at the required location and connected to the terminals as indicated on the wiring diagram.

Note that only low impedance speakers (8Ω) are suitable for connection to the intercom units.

Speaker volume is adjusted by a potentiometer mounted inside the intercom unit as follows:

Cabin Intercom station

3 horn speakers can be connected to this unit. Volume is adjusted by a small control knob mounted on the terminal rail as shown.

General intercom station

Volume is adjusted by a small multi-turn potentiometer on the circuit board behind the headset socket

CAUTION

DO NOT TURN THIS VOLUME UP BEYOND ITS FACTORY SETTING. SETTING THIS LEVEL TOO HIGH CAN DAMAGE THE SPEAKER.

Cabling to the external loudspeakers should be twisted pair of min 1.5mm² cable, and the cable length should not exceed 250m.

4. Specifications (Intercom stations)

Weight (excluding cables)	10.1kg
Dimensions	306W x 340H x 120D mm
Case Material	Stainless steel
Supply voltage	230Vac ±5%, 50Hz
Power Input	300W max
Frequency Response	250Hz - 5kHz
Audio amplifier output power (horn speakers)	100W
Audio amplifier output power (Cabin speaker)	3W
Internal mains fuse	20x5mm ceramic HRC type, 3.15A Anti Surge
Speaker output fuse	20x5mm glass quick blow, 3.15A
Temperature range (operating)	10°C - +50°C
Temperature range (storage)	-10°C - +60°C
Ingress protection:	IP55
Sound output level:	105dBA @ 1m from high power loudspeakers

5. Spare parts

Item	GAI-Tronics part number
Crane Cabin Intercom unit	333-02-0087-101
General Intercom unit	333-02-0087-102
Headset (including 10m cable extension)	333-02-0087-103
In line volume control	100-02-0312-001
Cab speaker	988-00-2055-000
Stem mic (150mm)	988-00-1017-001
Footswitch	989-01-0007-000
External loudspeaker	988-00-2054-000

6. Drawings appended to this manual

The following drawings are supplied with this manual:

Drawing number	Description
333-00-0087-101	General Arrangement, cabin intercom station
333-00-0087-102	General Arrangement, general intercom station
333-05-0087-101	Internal wiring diagram - cabin intercom station
333-05-0087-102	Internal wiring diagram - general intercom station

