

COMMUNICATE CO-ORDINATE CONTROL

Guardian

Safety Systems




PART No. FC100

October 2007

User Manual

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When you receive your packaged Guardian Communication System, inspect the packaging for external damage and check the contents. The package(s) should contain:

Speaker Microphone

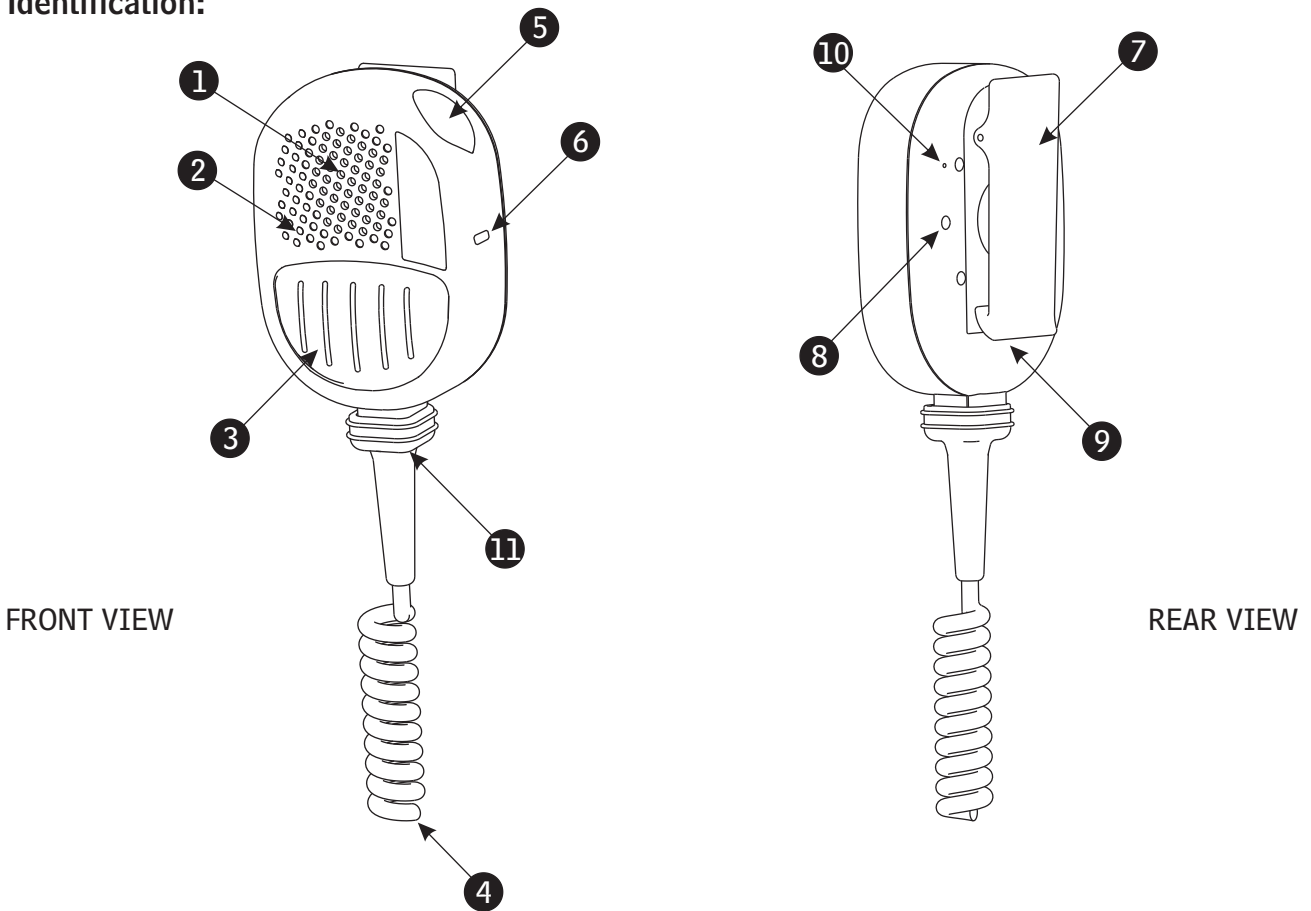
- Speaker Microphone
- Radio interface cable (pre-connected to the Speaker Microphone)
- User Manual

Transducer

- BA or Helmet transducer accessory
- Cable clips (BA only)
- Helmet Accessory Fastener
- User Manual

Should you notice any damage, please contact your supplier immediately.

Identification:



Legend:

- | | |
|---|---|
| <ul style="list-style-type: none"> ① Speaker ② Microphone ③ PTT Button ④ Radio Interface Cable ⑤ Accessory Interface Connector ⑥ Accessory Interface Connector drain hole | <ul style="list-style-type: none"> ⑦ Belt clip ⑧ Clip rotation locks ⑨ Part number/Batch ID label ⑩ Microphone vent ⑪ Cable glands
(2nd Gland not visible) |
|---|---|

General

The Guardian Communication System provides two way communication through either the helmet accessory or the breathing apparatus (BA) accessory. When correctly installed, the transducer accessory does not impair safety, operation or comfort of the protective equipment.

CAUTION HIGH AUDIO LEVELS

Never place the speaker (① / ⑮ / ⑳) close to your ear as the high audio volume may damage your hearing.

Use of equipment in hazardous areas

Before you deploy equipment to hazardous areas we recommend checking:

- The two-way radio meets the local safety standards.
- Compatibility of the interconnected devices.
- Equipment used has the appropriate certification.

Basic Operation

The nature of this accessory is to provide access to the interface functions of the radio transceiver.

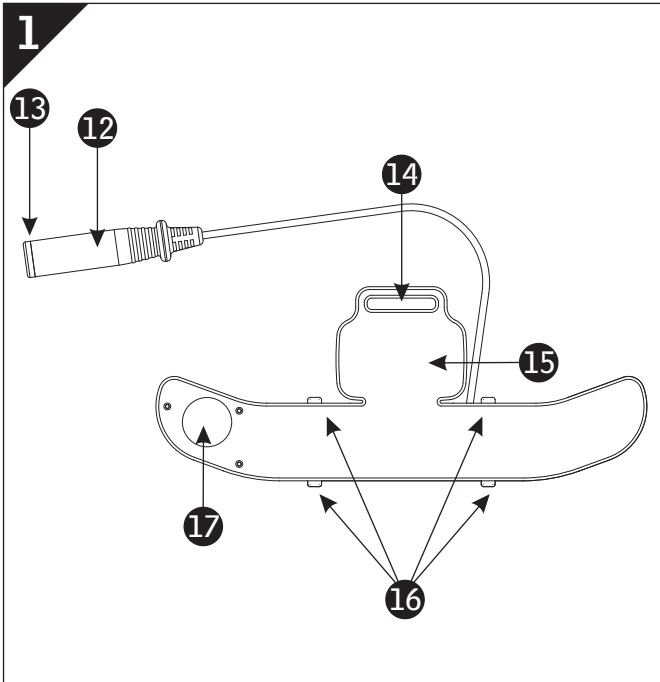
The Guardian Communication System consists of a Speaker Microphone and a transducer assembly.

The Speaker Microphone amplifies and conditions the audio signals from the internal Mic or the transducer assembly if connected.

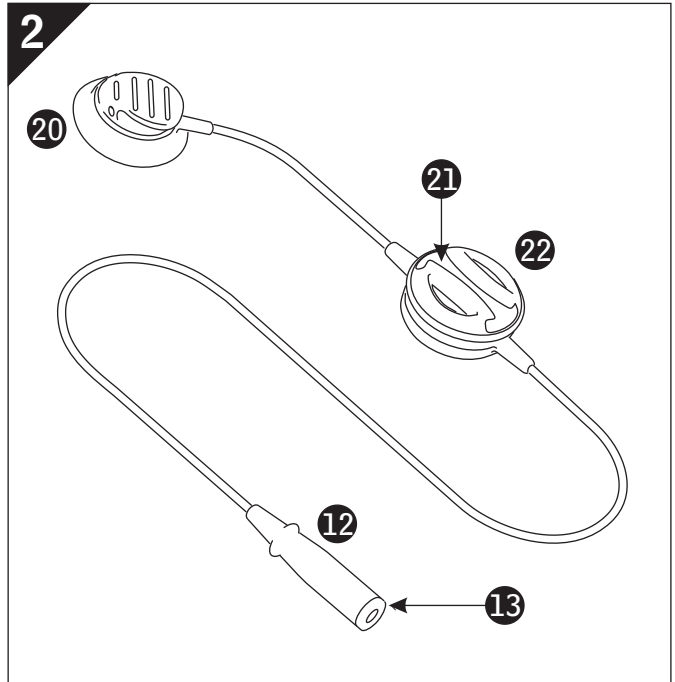
The receiver audio output from the radio transceiver is passed through to the internal speaker or to the transducer assembly if connected.

The transducer assembly consists of a sensor ⑰ or ⑳ to sense voice signals and a speaker ⑮ or ㉑ to reintroduce audio via bone conduction to the hearing centrum of the user's head.

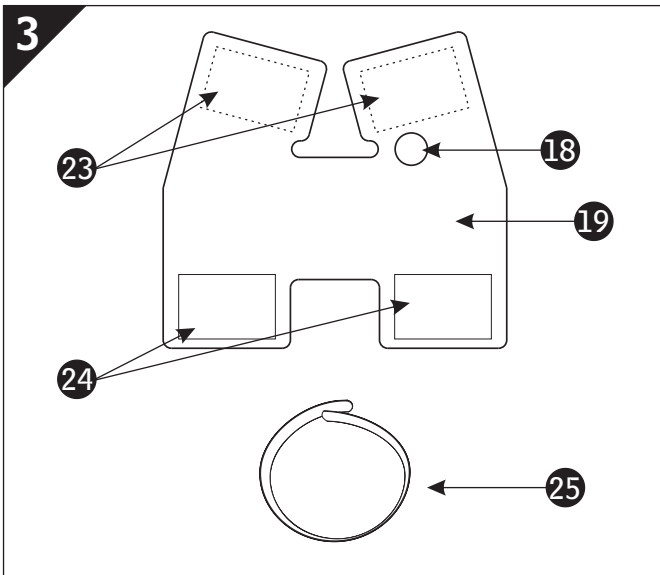
Helmet Accessory



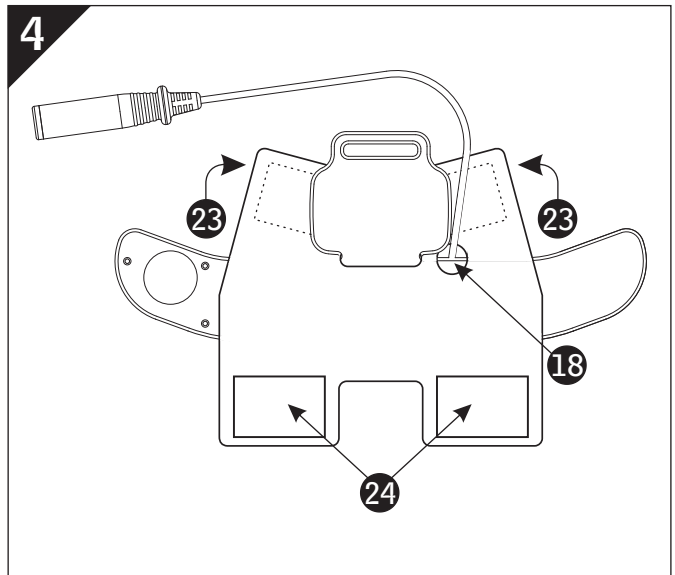
BA Accessory



Helmet Accessory Fastener



Helmet Accessory & Fastener



Legend:

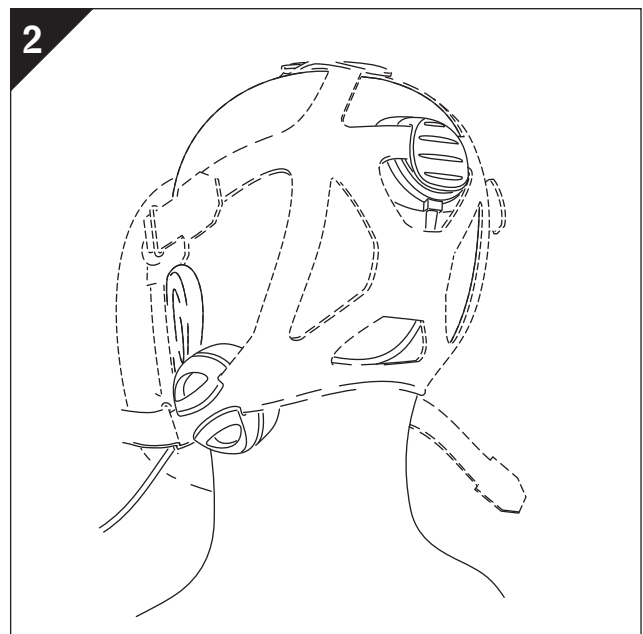
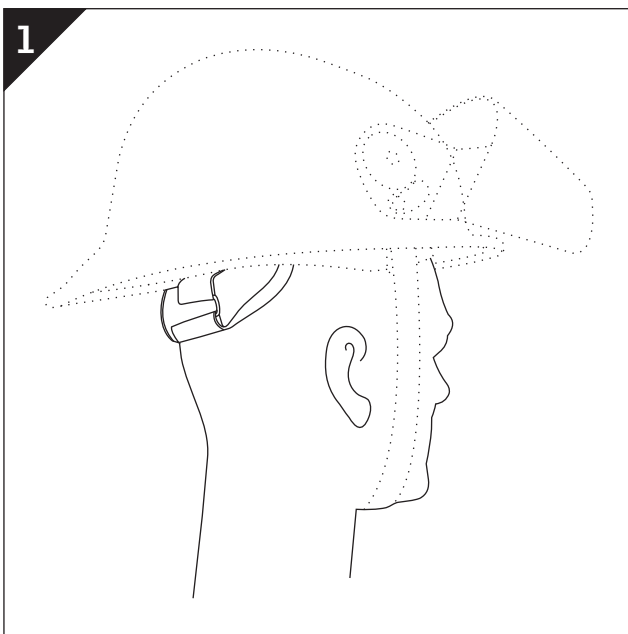
- 12 Accessory Connector
- 13 Identification Ring
- 14 Velcro Slot
- 15 Soft Speaker area for direct head contact
- 16 Locating Posts
- 17 Helmet Accessory Microphone
- 18 Cable Hole

- 19 Helmet Accessory Fastener
- 20 BA Microphone
- 21 BA Strap slot
- 22 BA Speaker
- 23 Velcro 'Loop' on reverse side
- 24 Velcro 'Hook'
- 25 Velcro Strap

The helmet accessory and BA accessory allows the user to wear suitable hearing protection, in fact we strongly recommend the use, because it greatly improves the hearing sensitivity by blocking unwanted ambient noise from reaching the hearing centrum through the user's ears.

The soft dome section is the microphone sensor (17; 20) and good contact to the head is crucial for proper operation.

This is especially important for the helmet. The headband should be comfortable but firm. The following two figures show the recommended location when used with the protective equipment.



In Speaker Microphone mode (no accessory plugged in), the internal Speaker and Microphone are enabled.

Since the Microphone employed is of a high quality noise cancelling type, for best performance position the Microphone port at an angle of $\sim 45^\circ$ while maintaining a distance of 5cm from mouth.

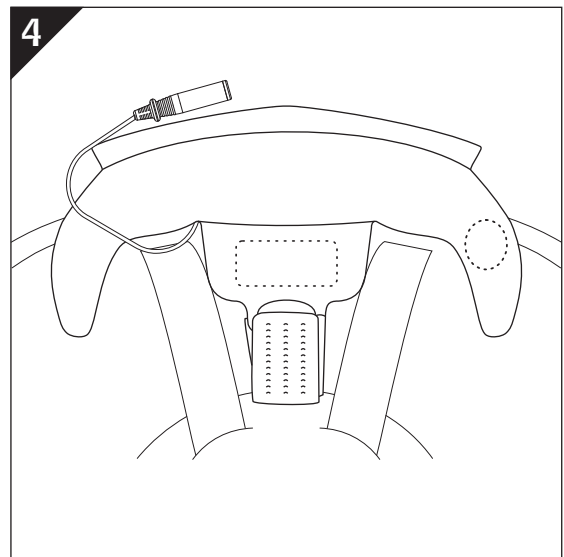
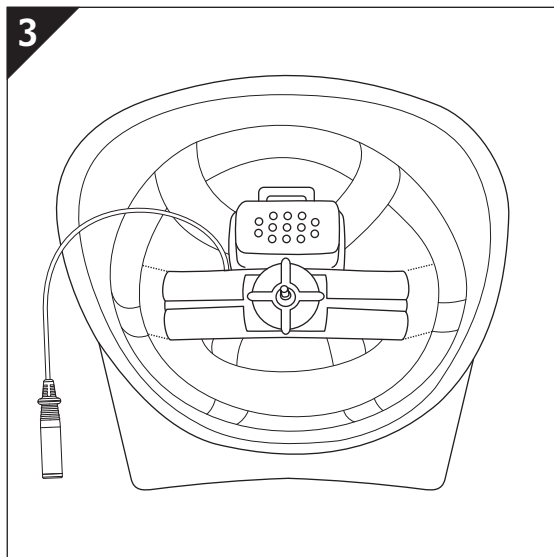
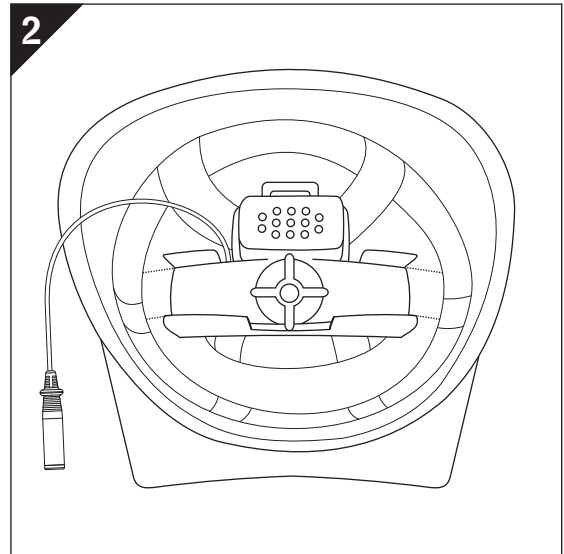
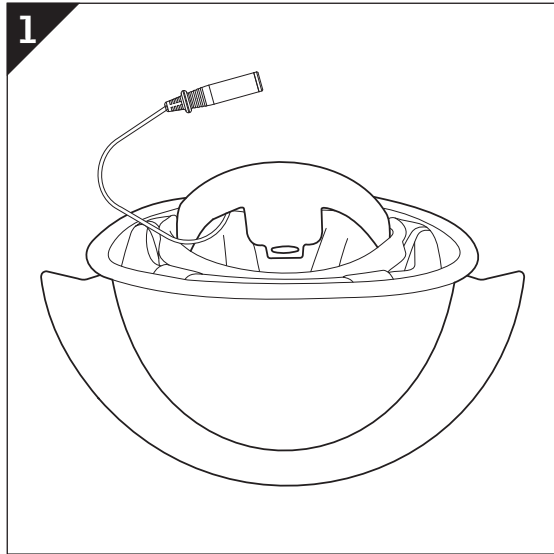
To activate the radio transmitter in any mode of Speaker Microphone configuration, press and hold the PTT button 3 .

To switch to receive mode, release the PTT button 3 .

The Speaker Microphone does not require extra batteries to operate.

The installation is quite simple. To aid the process, follow the drawings below.

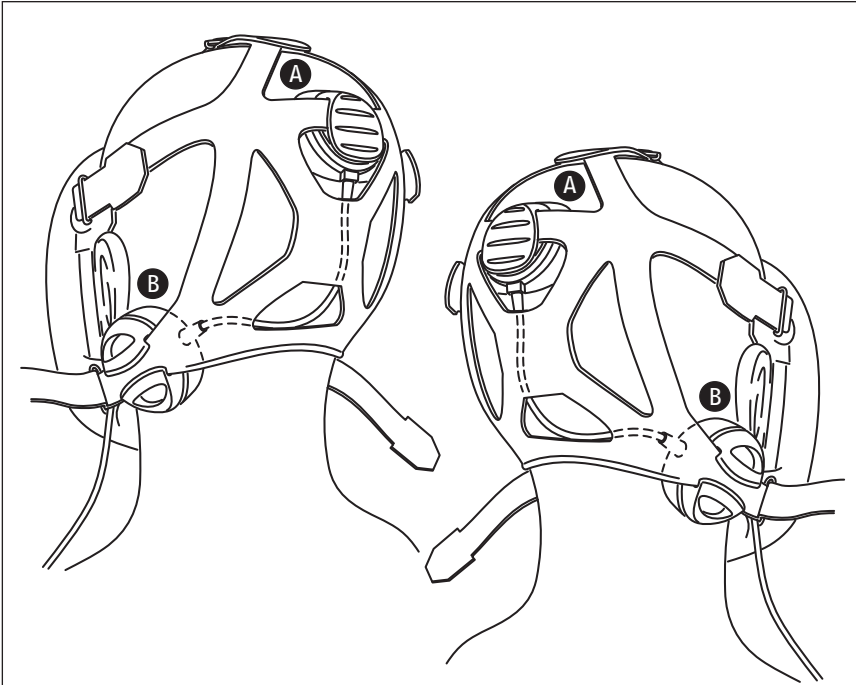
Helmet Accessory



- 1 Remove existing ratchet case cover from helmet, then slide accessory in, with the speaker facing down and grille facing toward the back of the helmet.
- 2 Ensure accessory is centered on ratchet case. Join Velcro until accessory is firmly locked on to ratchet case.
- 3 Check for correct operation by putting on the Helmet. Helmet Accessory Microphone should firmly touch the wearer's head. If necessary the most appropriate adjustment wedge must be selected and installed. To install a wedge, remove Helmet Accessory form the helmet. Pass the attachment stems through the three holes on the back of the Helmet Accessory, pull them tight and cut off the excess protruding stems. Re-install the Accessory and check for correct operation.
- 4 Slip Velcro strap through the slot and attach to the top head band of helmet. Put helmet on and adjust the velcro strap until the speaker is touching your head.

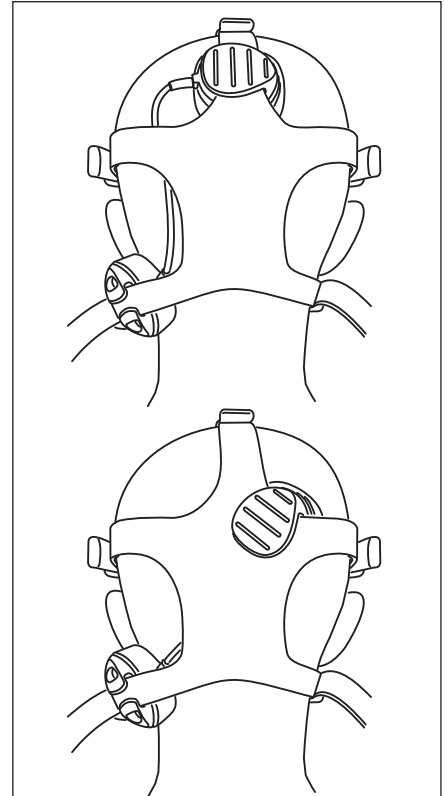
The installation is quite simple. To aid the process, follow the drawings below.

FC 202 BA Accessory



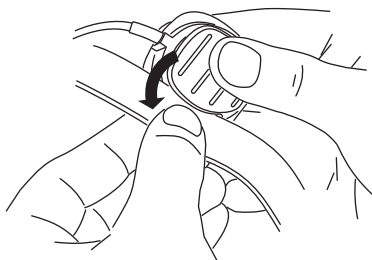
As shown, the FC 202 BA Accessory may be deployed to the left or right hand side of the mask to comply with applicable protocols.

Left or Right Hand Deployment



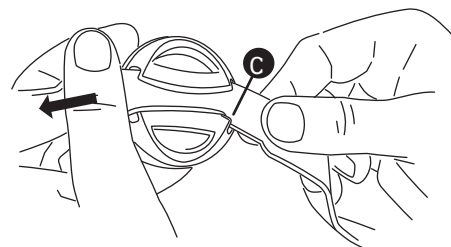
Microphone/Mask Variations

- 1 With mask removed from the head and all straps loosened, attach Microphone (A) to the rear spider using method shown below.



Push strap into side of clip and then rotate microphone around in direction shown to attach.

- 2 Attach the Speaker (B) to the bottom strap on either side of the mask using the method shown below. Ensure that the sound openings face outwards.



Push strap into cavity and hook one end over a strap retainer (C). Pull strap in the opposite direction to fully insert into retainer cavity.

- 3 Ensure the Speaker and Microphone are positioned so that the cord sits between the head and the mask straps. The jack end of the cord leading to the Speaker Microphone exits forward of the BA speaker and in line with the lower strap.
- 4 Adjust the BA accessory position on straps as shown.
- 5 Fit mask to head and verify position of BA accessory.

The Guardian Communication System does not require regular maintenance.

If cleaning is required, wipe clean or rinse with low-pressure water.

Do not use cleaning agents.

If dirt has accumulated around the recessed accessory plug in the Speaker Microphone, make sure the plug is clean before connecting the transducer assembly.

Equipment certified for hazardous environments should only be cleaned in safe areas as excessive electro static charges may build up during cleaning.

Do not lift the transducer assembly by the cable harness while it is installed into the helmet or BA. The excessive load may damage the internal bond between cable and the soft moulded components, resulting in broken wires and moisture ingress.

The Guardian Communication System is not field serviceable.

Warranty

Guardian Safety Systems by Innotech (hereinafter referred to as Guardian) warrants to the original purchaser only, that this product is free from defects in material and workmanship under normal use and authorises free service by the manufacturer only, within (12) twelve months from the date of purchase, in the country of purchase by the original purchaser only.

Patents and Design Registration

Speaker Microphone Part # FC00X

Aus Reg. Des. 158198; USA Des Pat. D519,111; Europe RCD No. 000162623-0002; NZ Reg. Des. 404718; Canada Reg. Des. 106429.

Helmet Accessory Part # FC101

Aus Pat. 2003203807, 2003100285, 2004101069, 2004202336, 2004202194; USA Pat. Pend. 10/527,300; Japan Pat. Pend. 534850; Canada Pat. Pend. 2,497,675; China Pat. Pend. 03821633.7; Europe Pat. Pend. EP 03794691.0; NZ Pat. 539250, 554282, 554118; Malaysia Pat. Pend. PI20033427

BA Accessory Part # FC202

Aus Reg. Des. 314520,314522,314521. Pat. 2003203807, 2003100285, 2004101069, 2004202336, 2004202194; USA Des Pat. Pend. 29/284,961, 29/284,963, 29/284,962 USA Pat. Pend. 10/527,300; Japan Pat. Pend. 534850; Canada Pat. Pend. 2,497,675; China Pat. Pend. 03821633.7; Europe Pat. Pend. EP 03794691.0 RCD Pend.; NZ Pat. 539250, 554282, 554118. Reg. Des. App. 409690, 409692, 409691; Malaysia Pat. Pend. PI20033427.

Problem	Cause	Remedy
<p>Poor sensitivity and audio quality with helmet transducer connected.</p>	<p>Not enough coupling to the head. Sensor located incorrectly.</p>	<p>Check assembly installation. If possible try to tighten the helmet headband. Adjust height of nape strap.</p>
<p>Internal speaker still operates with Accessory plugged in.</p>	<p>Dirty accessory interface connectors. Plug and socket not fully mated.</p>	<p>Clean contacts. Push socket all the way down over the plug. Make sure the identification ring 13, is clearly visible through the accessory interface drain hole 6.</p>
<p>After washing the Speaker Microphone, device malfunctions.</p>	<p>Water ingress! Unit was rinsed with too high water pressure. Cable glands are faulty or enclosure is cracked.</p>	<p>Inspect device for damage. If ok, hold device vertically with the cable glands pulled back and facing down. Check for leaking water. Shake gently and let dry in vertical position for 2-3 hours. If problem persists contact your nearest dealer.</p>
<p>Transmitter does not key up when PTT button is pressed.</p>	<p>Radio battery exhausted.</p>	<p>Replace battery as per radio manufacturer's instructions.</p>
<p>Received audio is very distorted.</p>	<p>Radio battery nearly exhausted. Receiving strong signal.</p>	<p>For both cases, the radio internal amplifier is overloaded. Reduce volume slightly. Check radio transceiver battery.</p>
<p>No extra batteries are required because the Speaker Microphone is powered by the radio transceiver.</p>		

Speaker Microphone

Dimensions	75 x 100 x 26mm
Weight including cable	~ 275g
Cable length	~ 1.8m (full extension)
Speaker rating	1W _{nom} (Applied power is radio dependant)
Speaker Sound Pressure Level	~ 80db(c) @ 1W, 0.5m avg. over (600-1200Hz)
Microphone type	Noise cancelling condenser Mic.
Power supply	Radio auxiliary power output
Supply requirements	4.2V - 9.9V _{DC} @ 8.5mA _{Typical}
Ingress protection	IP54
Operating temp.	-20°C to + 60°C
Accessory interface	5 way non locking Plug with proprietary signal configuration
Installation	Rotatable pocket or belt clip.

Helmet Accessory

Installation	Helmet ratchet case - Nape band
Weight including cable	~ 120g
Cable length	0.5m
Ingress protection	IP65
Operating Temp.	-20°C to + 60°C
Connector	Over moulded, 5-way - quick release socket, with proprietary signal configuration.

BA Accessory

Installation BA	BA-Mask straps
Weight including cable	~ 90g
Cable length	0.8m
Ingress protection	IP66
Operating Temp.	-20°C to + 60°C
Connector	Over moulded, 5-way - quick release socket, with proprietary signal configuration.

Spare Parts

Part # FC701 - Replacement Helmet Accessory Fastener

Part # FC702-10 - Pack of 10 BA Accessory Cable Management Clips

Compliance

Protection rating for potentially explosive atmospheres:

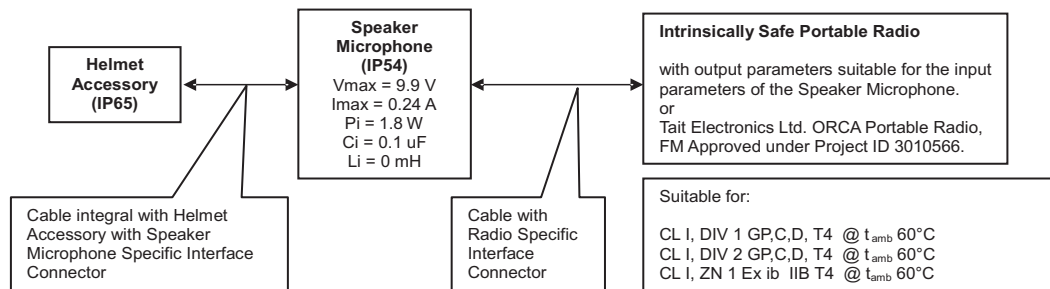
Intrinsically Safe (Approval by FM-Global)
ref. Control Drawing DSN0017

EMC:

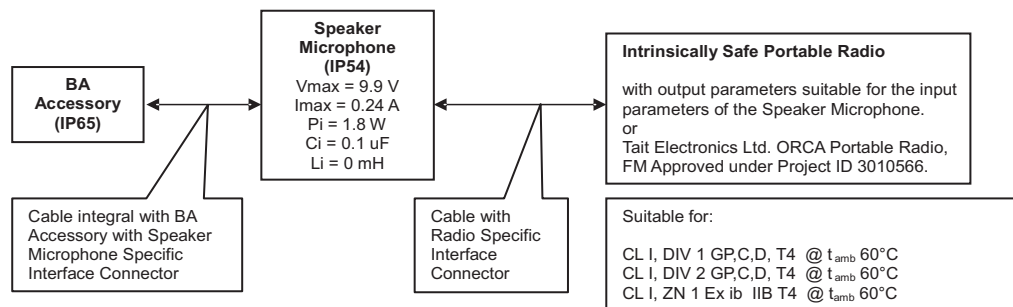
C-Tick, Emissions and Susceptibility
according to CISPR-13

GUARDIAN COMMS CONTROL DRAWING

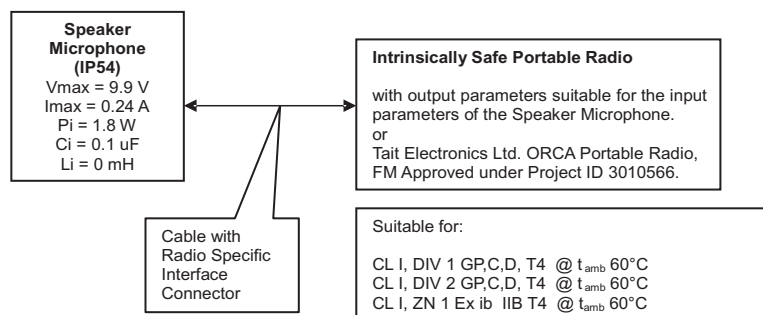
HELMET CONFIGURATION



BA CONFIGURATION



SPEAKER MIC ONLY CONFIGURATION



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