

# User Guide

## Encore TWC-703 Adapter User Guide



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Part Number: PUB-00039 Rev B

## Document Reference

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Encore TWC-703 Adapter

PUB-00039 Rev B

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# 1 Important Safety Instructions and Compliance

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1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as a radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Only use attachments/accessories specified by the manufacturer.
10. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
11. Unplug this apparatus during lightning storms or when unused for long periods of time.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. **WARNING:** To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.

Please familiarize yourself with the safety symbols in Figure 1. When you see these symbols on this product, they warn you of the potential danger of electric shock if the station is used improperly. They also refer you to important operating and maintenance instructions in the manual.



This symbol alerts you to the presence of uninsulated dangerous voltage within the product's enclosure that might be of sufficient magnitude to constitute a risk of electric shock. Do not open the product's case.



This symbol informs you that important operating and maintenance instructions are included in the literature accompanying this product.

## 1.1 Compliance Section

- Applicant Name: Clear-Com LLC
- Applicant Address: 1301 Marina Village Pkwy, Suite 105, Alameda CA 94501, USA
- Manufacturer Name: HM Electronics, Inc.
- Manufacturer Address: 2848 Whiptail Loop, Carlsbad, CA 92010, USA
- Country of Origin: USA
- Brand: CLEAR-COM

Product Regulatory Model Number: TWC-703

**Caution:** All products are compliant with regulatory requirements detailed in this document when installed correctly in Clear-Com product per Clear-Com specifications.

**Caution:** Product modification not expressly approved by the party responsible for compliance can void the user's authority to operate the equipment

### 1.1.1 FCC Class A

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

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by Clear-Com could void the user's authority to operate this equipment.

### 1.1.2 Canada ICES-003

Industry Canada ICES-003 Compliance Label: CAN ICES-3 (A)/NMB-3(A) This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

### 1.1.3 European Union ( CE )

Hereby, Clear-Com LLC declares that the product described herein are in compliance with the following regulations:

#### Directives:

EMC Directive 2014/30/EU

RoHS Directive 2011/65/EU, 2015/863

#### Standards:

EN 55032 / CISPR 32

EN 55035 / CISPR 35

EN 61000-3-2

EN 61000-3-3

**Warning:** This is a Class A product. In a residential environment, this product may cause radio interference in which case the user may be required to take adequate measures.

**Note:** *During the conducted and radiated immunity tests, an audible tone can be heard in certain frequencies. The TWC-703 continued to operate and the tones did not interfere or diminish its functions. The tones can be reduced, and in some cases, be eliminated by the following:*

1. If using the power adapter for the TWC-703, use a ferrite clamp, Laird 28A2024-0A2 or similar. Make one loop of the power cable around the clamp as close as possible to the

TWC-703.

2. Use ferrite clamps, Fair-Rite 0431173551 or similar, for the XLR cable, connected to the host device, i.e. MS-702. Only one cable per clamp. Make one loop of the XLR cable around the clamp as close as possible to the host device.

#### 1.1.4 Waste Electrical and Electronic Equipment (WEEE)

The European Union (EU) WEEE Directive (2012/19/EU) places an obligation on producers (manufacturers, distributors and/or retailers) to take-back electronic products at the end of their useful life. The WEEE Directive covers most HME products being sold into the EU as of August 13, 2005. Manufacturers, distributors and retailers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

##### Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging which indicates that this product was put on the market after August 13, 2005 and must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of the user's waste equipment by handing it over to a designated collection point for the recycling of WEEE. The separate collection and recycling of waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local authority, your household waste disposal service or the seller from whom you purchased the product.



#### 1.1.5 United Kingdom (UKCA)

Hereby, Clear-Com LLC declares that the product described herein are in compliance with the following regulations:

Electromagnetic Compatibility Regulations 2016.

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

**Warning:** This is a Class A product. In a residential environment this product may cause radio interference in which case the user may be required to take adequate measures.



## 2 Introduction

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Clear-Com recommends that you read through this User Guide completely to understand the functions of the TW-703 adapter. If you encounter a situation or have a question that this User Guide does not address, contact your dealer or call Clear-Com directly. Our applications support and service people are standing by to assist you.

### 2.1 Clear-Com Partyline Wiring and TW

Clear-Com stations normally interconnect with “standard” 3-pin XLR microphone cable (two conductor shielded audio cable). This single cable provides a single channel of full duplex, two way intercom, “call” signaling, and the required DC operating power.

Multiple channel systems normally use separately shielded cables for individual channels. This “single” cable or “pair per channel” system enables ease and flexibility of station/channel assignments, simple power supply redundancy, and a minimization of crosstalk between channels.

On standard cabling, one conductor (pin #2) carries power to the remote stations. The second conductor (pin#3) carries full duplex, two-way intercom audio and “call” signaling. The shield or drain wire (pin#1) is a common ground for the power and the intercom audio/signaling.

The intercom line (pin#3) has a 200 $\Omega$  impedance established by a passive termination network (one network per channel). This termination is usually located at the system main station or power supply.

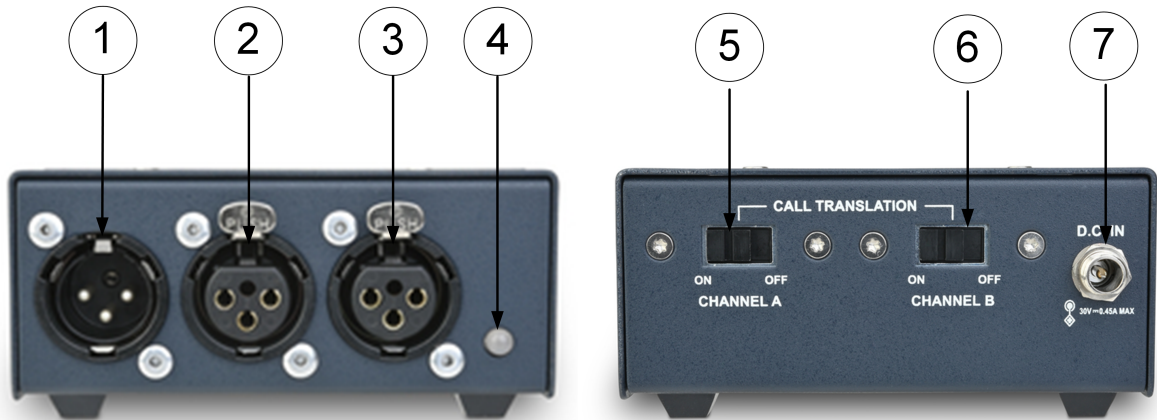
All Clear-Com stations bridge the intercom line with a load impedance of 15k $\Omega$  or greater. This results in the audio level remaining constant, without fluctuations as stations join or leave the channel.

Normally Clear-Com portable two channel intercom stations (usually belt packs) are connected with special 2- or 3-pair cables terminated with 6-pin XLR type connectors. However, in some applications, it is desirable to access two discrete channels over a single standard 3-pin microphone cable. The TWC-703 adapter combined with intercom stations equipped with the “TW” option makes two channel operation on a single 3-pin cable possible.

## 2.2 TWC-703 Connectors and Indicators

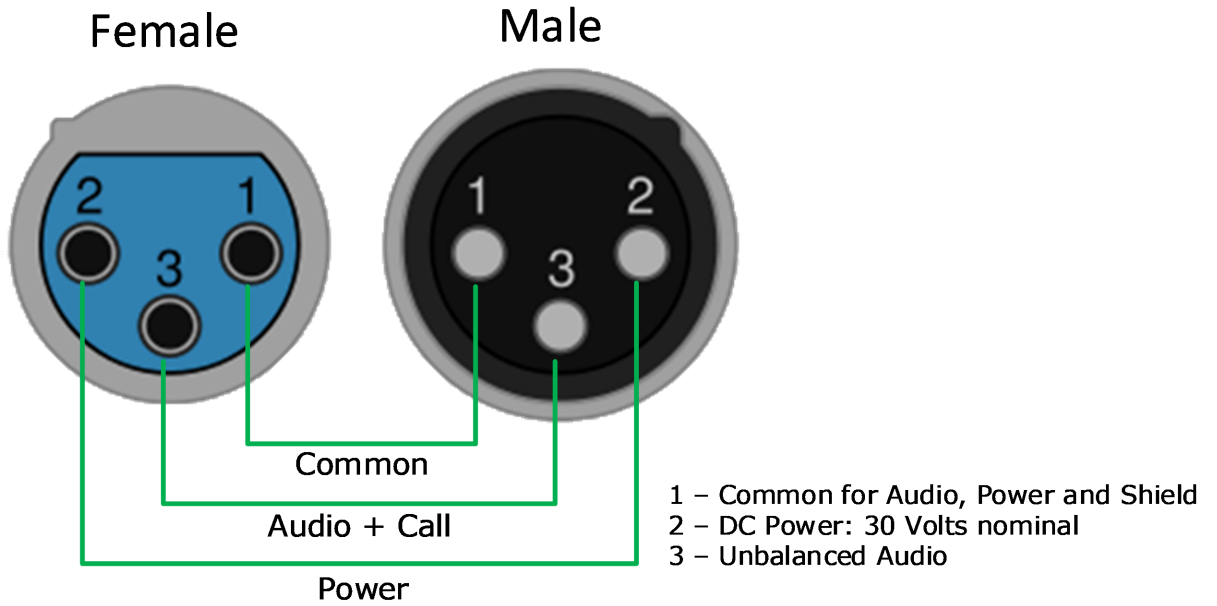
This section describes the TWC-703 connectors and indicators.

### 2.2.1 Front and Rear Panel

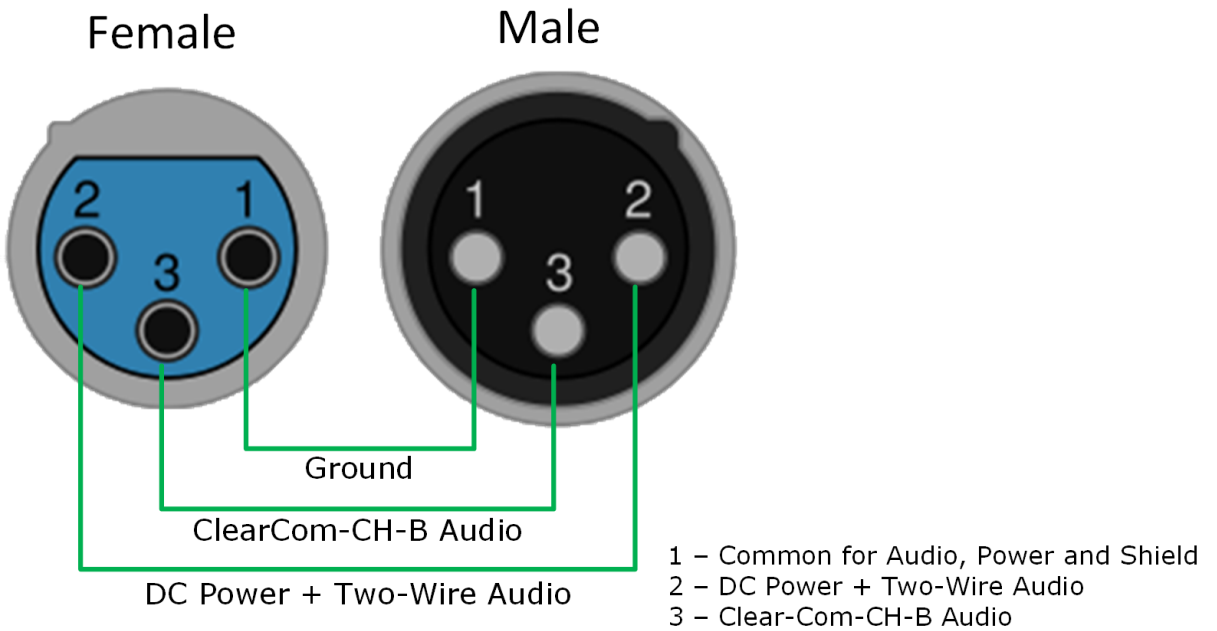


Item	Description
1	3-pin male XLR TW Dual Channel output connector
2	3-pin female XLR CC channel B input connector
3	3-pin female XLR CC channel A input connector
4	Short circuit dual LED. Green: normal operation, Red: Overload. Note: When an external power supply is used, the red LED flashes red during overload. Otherwise, the red LED is always on during overload. An overload state might arise if, for example, you have too many beltacks connected or a cable short circuit.
5	Call signal translation switch for channel A
6	Call signal translation switch for channel B
7	DC power input connector <b>Note:</b> Optional to inject power to the TW output or for stand alone use.

### 2.2.2 Clear-Com Partyline Pinout



### 2.2.3 TW Partyline Pinout



### 3 TWC-703 Adapter

TWC-703 combines two standard Clear-Com intercom channels, on two separate cables, onto a single standard 3-pin microphone cable. This includes bi-directional Two-Wire/Clear-Com call signal translation. It does this by combining two channels of Clear-Com intercom audio onto a single dual channel on separate wires within a single cable. One wire in the same cable carries 30 volts DC operating power. Clear-Com refers to this combination as TW.

For non stand-alone systems, there is an optional Power Injection Mode in which the TWC-703 Adapter is powered using an external power supply (PSU-EXT-003 or 453G042). This enables you to have flexible powering options for larger systems.

You can optionally use the TWC-703 Adapter as a stand-alone device that can power up to 12 RS-703 two-wire belt packs or their equivalent. This stand-alone TWC-703 creates a small dual channel TW intercom system. This configuration requires an external power supply (PSU-EXT-003 or 453G042).

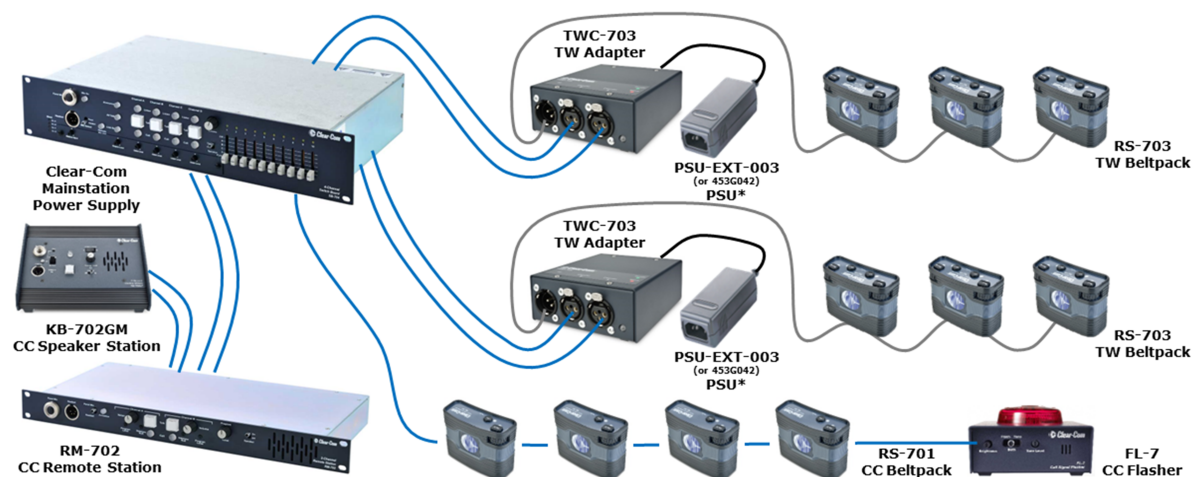
**Note:** *The external power supply (PSU-EXT-003 or 453G042) is not supplied with the TWC-703 Adapter and must be ordered separately.*

If a TW-equipped intercom station is connected to a standard Clear-Com intercom line (without a TWC adapter), only the Channel B portion of the station will operate normally. Channel A will appear to be inactive. Channel B intercom audio and “call” signaling is simply passed through the TWC-703 to the intercom station, and operates in the normal Clear-Com manner.

For more information about the TWC-703 operating modes, see:

- **Normal Mode on page 13**
- **Power Injection Mode on page 14**
- **Stand-Alone Mode on page 14**

A typical system configuration, using both Clear-Com and TW Partyline wiring, is shown below.

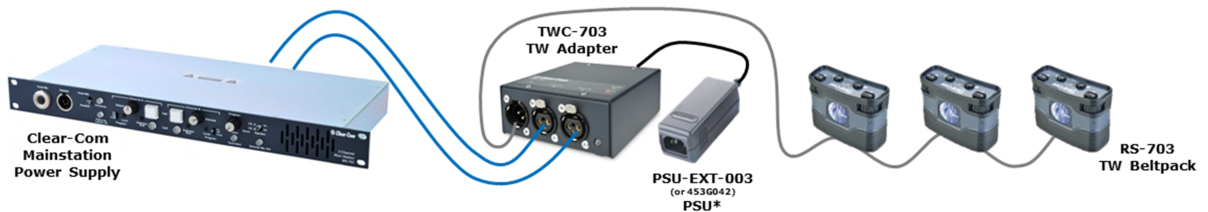


## 3.1 Normal Mode

When you use the TWC-703 Adapter in Normal Mode, two channels of Clear-Com Partyline are converted to TW. You have the option to use an external PSU (PSU-EXT-003 or 453G042) to inject power to the TW output and reducing power draw from the systems main station or power supply.

**Note:** *The optional PSU is not included with the TWC-703 Adapter, and must be ordered separately.*

A typical system connection example is given below.



### 3.1.1 To connect and operate the TWC-703 in Normal Mode:

1. Connect the required two channels of standard Clear-Com intercom lines to the female Channel A and Channel B connectors .
2. Connect the TW remote intercom station to the male TW two-channel output connector.
3. Adjust the call signal translation settings as required. These switches enable/disable the Call Translation between TW and Clear-Com. Disabling the call translation switches is only necessary if one channel is sent through multiple TWC-703 Adapters.

**Note:** *RS703 Beltpacks must be configured for RTS™-TW using DIP switches.*

**Note:** *To operate multiple TWC-703s in parallel on the same channel, only one TWC-703 should have call translation enabled for the channel. All other TWCs should have call translation disabled. When two, or more, TWC-703s are connected to the same intercom channel with Call Translation enabled, a call signal feedback loop will be generated within the system. To solve this condition ensure only one TWC-703 performs call signal translation on an intercom channel.*

**Note:** *Under rare operating conditions, internal jumper switches J8 and J9 allow configuration of auto-termination. See **Internal Configuration on page 16**.*

**Note:** *Under rare operating conditions, internal jumper switch J10 allows the configuration of RTS Compatibility Mode. See **Internal Configuration on page 16**.*

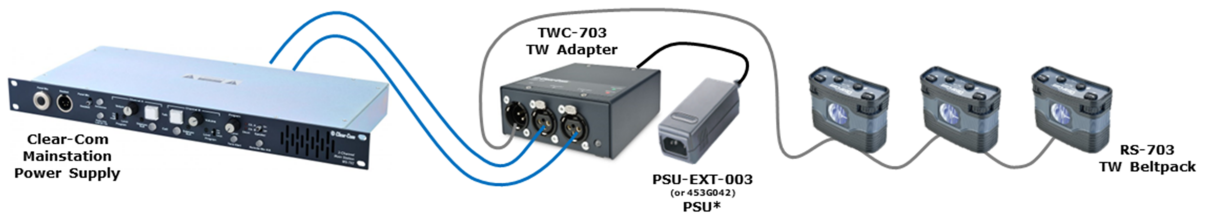
**Note:** *The TWC-703 adapter contains an automatic current limiter and reset circuit.*

## 3.2 Power Injection Mode

This optional mode is identical to Normal Mode but uses an external PSU (PSU-EXT-003 or 453G042) to add power to the TWC-703 Adapter's TW output to prevent draining power from the Encore Master Station or PSU.

**Note:** *The PSU is not included with the TWC-703 Adapter, and must be ordered separately.*

**Note:** *A typical system connection example is given below.*

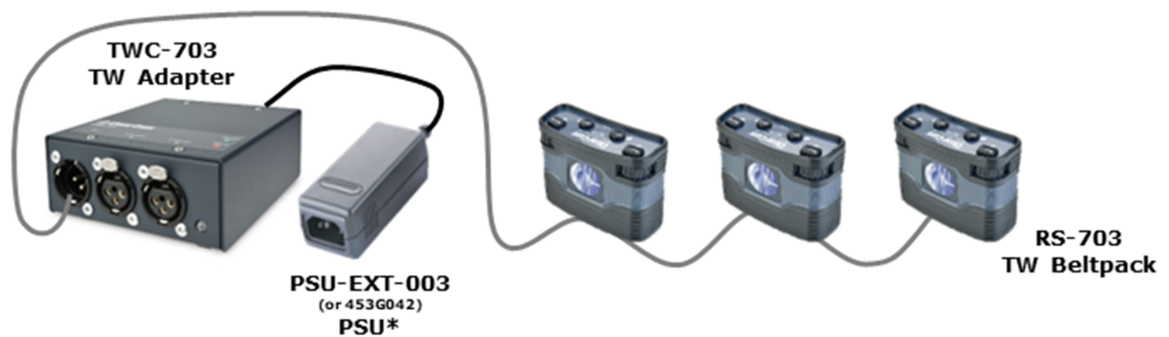


## 3.3 Stand-Alone Mode

This mode enables you to have a very small 2-channel TW partyline system by using the external PSU (PSU-EXT-003 or 453G042).

**Note:** *The PSU is not included with the TWC-703 Adapter, and must be ordered separately.*

A typical system connection example is given below.



### 3.3.1 To connect and operate the TWC-703 in Stand-Alone Mode.

1. Disconnect any Clear-Com power lines from the front panel of the adapter.

**Note:** *In case of unstable audio performance and level fluctuations, ensure that J8 and J9 internal switches are **ON**. For default settings, see **Internal Configuration on page 16**.*

2. Connect the external power supply to the rear panel of the adapter.

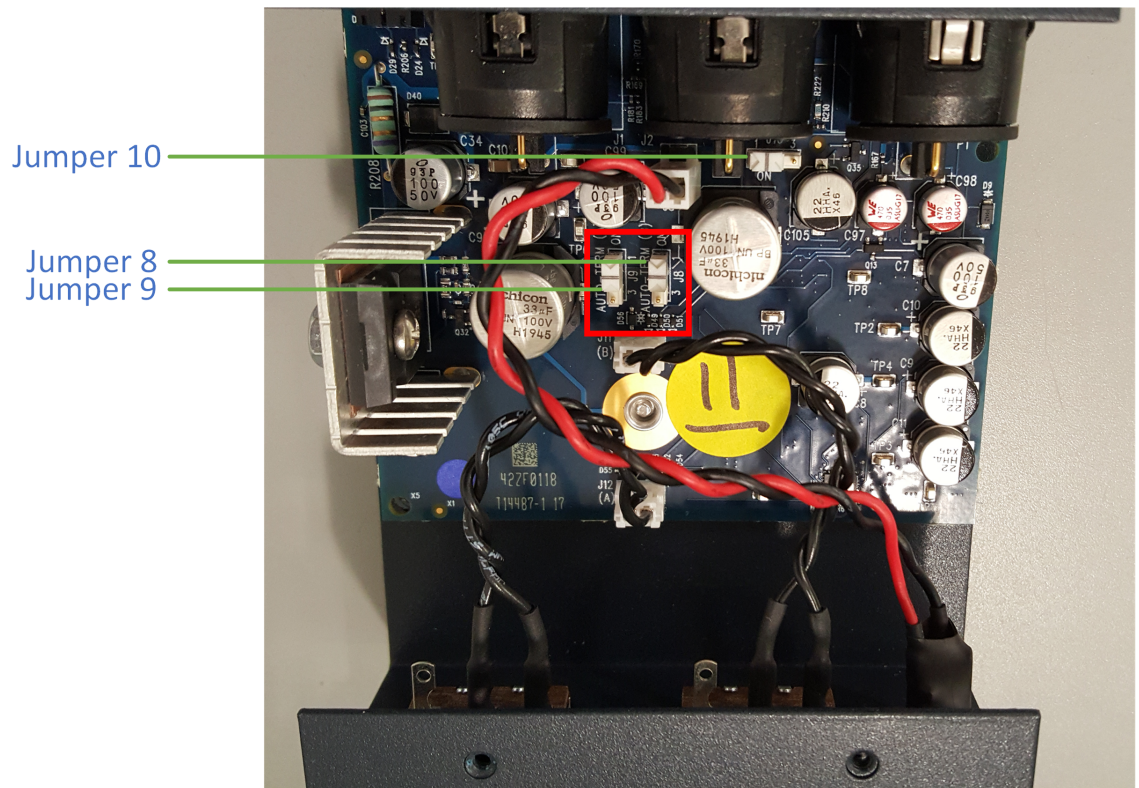
3. Connect RS703 beltpacks. You can connect up to 12 beltpacks.

**Note:** *RS703 Beltpacks must be configured for TW using DIP switches.*

## 3.4 Internal Configuration

The TWC-703 Adapter has three jumper switches located on the internal PCB intended for operating conditions that are rarely expected to be experienced. These are:

- J8 - used to configure auto-termination of channel A. Default is **ON**.
- J9 - used to configure auto-termination of channel B. Default is **ON**.
- J10 - used to enable or disable RTS Compatibility Mode. Default is **OFF**.



**Note:** The TWC-703 Adapter applies termination per channel if there is no power on Clear-Com channel A or B. In this condition the TWC-703 Adapter assumes it is in Standalone Mode.

**Note:** Certain RTS TW beltpacks can create audio interference (buzz) on channel B during call signal. This circuit applies an additional termination to channel B to stabilize the interference.



## 4 Technical Specifications

The following tables list the TWC-703 technical specifications.

### 4.1 Connectors, Indicators and Switches

Connectors, Indicators and Switches	
Front panel connectors	Intercom In: 2 x XLR3F TW: 1 x XLR3M
Front panel indicator	Power On (green) Overload (red)
DC power input connector	-
Call translation switch for channel A	-
Call translation switch for channel B	-
Power/Overload indicator	-

### 4.2 Power requirements

Power requirements	
Input voltage	20-30Vdc
Current draw (idle)	≤65mA
Current draw (max)	550mA
TW Output Current (Max)	550mA

### 4.3 Environmental

Environmental	
Operating temperature	32° to 122° Fahrenheit (0° to 50° Celsius)

## 4.4 Dimensions and weight

Dimensions and weight	
Dimensions	2H x 4W x 5D (Inches) 51 x 101 x 127 (Millimeters)
Weight	1.1 lbs (0.503 kg)

## 4.5 Notice about specifications

While Clear-Com makes every attempt to maintain the accuracy of the information contained in its product manuals, that information is subject to change without notice. Performance specifications included in this manual are design-center specifications and are included for customer guidance and to facilitate system installation. Actual operating performance may vary.

## 5 Technical Support and Repair Policy

To ensure that your experience with Clear-Com and our World Class products is as beneficial, effective and efficient as possible, we would like to define the policies and share some "best practices" that can accelerate any problem solving processes which we may find necessary and to enhance your customer service experience. Our Technical Support, Return Material Authorization, and Repair Policies are set forth below. These Policies are subject to revision and constantly evolve in order to address our Customers' and the Market's needs. Therefore, these are provided by way of guidance and for information only and may be changed at any time with or without Notice.

### 5.1 Technical Support Policy

- a. Telephone, online, and e-mail technical support will be provided by the Customer Service Center free of charge during the Warranty Period.
- b. Technical support will be provided free of charge for all software products under the following conditions:
  - i. The application, operating, and embedded software is installed on a product covered by Clear-Com's Limited Warranty, and:
  - ii. The software is at the current release level; or,
  - iii. The software is one (1) version removed from current.
  - iv. Older versions of software will receive "best-effort" support, but will not be updated to correct reported bugs or add requested functionality.
- c. For Technical Support:
  - i. North and South America, (incl. Canada, Mexico, and the Caribbean) & US Military:  
Hours:0800 - 1700 Pacific Time  
Days:Monday - Friday  
Tel:+1 510 337 6600  
Email:Support@Clearcom.com
  - ii. Europe, the Middle East and Africa:  
Hours:0800 - 2000 Central European Time  
Days:Monday - Friday  
Tel:+49 40 853 999 700  
Email:TechnicalSupportEMEA@clearcom.com

- iii. Asia-Pacific:
  - Hours:0800 - 1700 Pacific Time
  - Days:Monday - Friday
  - Tel:+1 510 337 6600
  - Email:Support@Clearcom.com
- d. Email Technical Support is available for all Clear-Com branded products free of charge for the life of the product, or two years after a product has been classified as obsolete, whichever comes first. To log or update a request, send an email to: Support@Clearcom.com.
- e. Support for Distributor and Dealer Sales
  - a. Distributors and Dealers may utilize the Customer Service Centers once a system has been installed and commissioned. Clear-Com Systems and Applications Engineers will provide support to the Distributor from the pre-sales stage through to satisfactory installation for new system purchases. Customers will be encouraged to contact their Dealer or Distributor with their installation and technical support enquires rather than using the Customer Service Centers directly.
- f. Support for Direct Sales
  - i. Customers may utilize the Customer Service Centers once a system has been installed and commissioned by Clear-Com Systems and Applications Engineers, or in the case of project installations, once the Project Team has completed the hand-over to the Support Centers.

## 5.2 Return Material Authorization Policy

- a. Authorizations: All products returned to Clear-Com or a Clear-Com Authorized Service Partner must be identified by a Return Material Authorization (RMA) number.
- b. The Customer will be provided with an RMA number upon contacting Clear-Com Sales Support as instructed below.
- c. The RMA number must be obtained from Clear-Com via phone or email prior to returning product to the Service Center. Product received by the Service Center without a proper RMA number is subject to return to the Customer at the Customer's expense.
- d. Damaged equipment will be repaired at the Customer's expense.
- e. Returns are subject to a 15% restocking fee.

- f. Advance Warranty Replacements (AWRs);
- i. During the first 30 days of the Standard Warranty Period: Once the equipment fault has been verified by Clear-Com or its authorized representative, Clear-Com will ship a new replacement product. The Customer will be provided with an RMA number and be required to return the faulty equipment within 14 days of receipt of the replacement or will be invoiced for the list price of a new product.
  - ii. During days 31-90 of the Standard Warranty Period: Once the equipment fault has been verified by Clear-Com or its authorized representative, Clear-Com will ship a like-new, fully refurbished replacement product. The Customer will be provided with an RMA number and be required to return the faulty equipment within 14 days of receipt of the replacement or will be invoiced for the list price of a new product.
  - iii. To obtain an RMA number or request an AWR:  
North and South America, Asia-Pacific, and US Military:  
Hours:0800 - 1700 Pacific Time  
Days:Monday - Friday  
Tel:+1 510 337 6600  
Email:SalesSupportUS@Clearcom.com  
  
Europe, the Middle East and Africa:  
Hours:0800 - 1700 GMT + 1  
Days:Monday - Friday  
Tel:+ 44 1223 815000  
Email:SalesSupportEMEA@Clearcom.com
  - iv. Note: AWRs are not available for UHF WBS Analog wireless intercom systems. UHF WBS Analog wireless intercom systems out-of-box failures must be returned to Clear-Com for repair.
  - v. Note: Out-of-box failures returned after 90 days will be repaired and not replaced unless approved by Clear-Com Management.
  - vi. Note: AWRs are not available after 90 days of receipt of product unless an AWR Warranty Extension is purchased at the time of product purchase.
  - vii. Note: Shipping charges, including duties, taxes, and insurance (optional), to Clear-Com's factory are the responsibility of the Customer.

- viii. Note: Shipping AWRs from Clear-Com is at Clear-Com's expense (normal ground or international economy delivery). Requests for expedited shipping (E.g. "Next-Day Air"), customs duties, and insurance are the responsibility of the Customer.

## 5.3 Repair Policy

- a. Repair Authorizations: All products sent to Clear-Com or a Clear-Com Authorized Service Partner for repair must be identified by a Repair Authorization (RA) number.
- b. The Customer will be provided with an RA number upon contacting Clear-Com Customer Services as instructed below.
- c. The RA number must be obtained from Clear-Com via phone or email prior to returning product to the Service Center. Product received by the Service Center without a proper RA number is subject to return to the Customer at the Customer's expense.
- d. Return for Repair
- i. Customers are required to ship equipment at their own cost (including transportation, packing, transit, insurance, taxes and duties) to Clear-Com's designated location for repair.  
  
Clear-Com will pay for the equipment to be returned to the Customer when it is repaired under warranty  
  
Shipping from Clear-Com is normal ground delivery or international economy.  
  
Requests for expedited shipping (E.g. "Next-Day Air"), customs duties, and insurance are the responsibility of the Customer.
  - ii. Clear-Com does not provide temporary replacement equipment ("loaner") during the period the product is at the factory for repair. Customers should consider a potential prolonged outage during the repair cycle, and if required for continuous operations purchase minimum spare equipment required or purchase an AWR Warranty Extension.
  - iii. No individual parts or subassemblies will be provided under warranty, and warranty repairs will be completed only by Clear-Com or its Authorized Service Partner