

# **CLEAR-COM ENCORE**

## **TWC-701 AND TWC-704 ADAPTORS**

### **INSTRUCTION MANUAL**

TWC-701 and TWC-704 Adaptors Instruction Manual  
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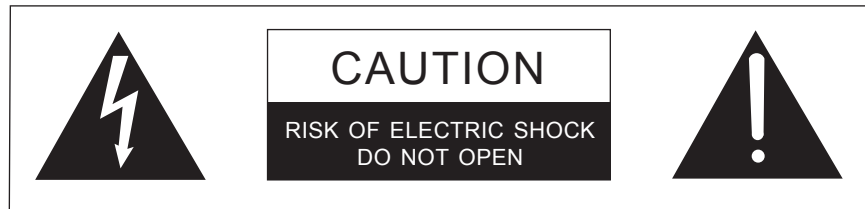


# IMPORTANT SAFETY INSTRUCTIONS

*Please read and follow these instructions before operating this product.*

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 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.

*Figure 1: Safety Symbols*

## EMC AND SAFETY

The TWC-701 and TWC-704 products meet all relevant CE and FCC specifications set out below:

EN55103-1 Electromagnetic compatibility. Product family standard for audio, video, audio-visual, and entertainment lighting control apparatus for professional use. Part 1: Emissions.

EN55103-2 Electromagnetic compatibility. Product family standard for audio, video, audio-visual, and entertainment lighting control apparatus for professional use. Part 2: Immunity.

And thereby compliance with the requirement of Electromagnetic Compatibility Directive 2004/108/EC and Low Voltage Directive 2006/95/EC

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.



# OPERATION

## INTRODUCTION

Congratulations on choosing this Clear-Com product. Clear-Com was established in 1968 and remains the market leader in providing intercoms for entertainment, broadcast and industrial applications. The ruggedness and high build-quality of Clear-Com products defines the industry standard. In fact, many of our original beltacks and main stations are still in daily use around the world.

We recommend that you read through this manual completely to better understand the functions of the TW-701 and TW-704 adaptors. If you encounter a situation or have a question that this manual does not address, contact your dealer or call Clear-Com directly at the factory. Our applications support and service people are standing by to assist you. (Refer to Chapter 3: “Warranty” for contact information.) Thank you for selecting Clear-Com for your communications needs.

## STANDARD CLEAR-COM SYSTEM WIRING

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 200Ω 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 15Ω 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 beltacks) 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-701 and TWC-704 adaptors combined with intercom stations equipped with the “TW” option makes two channel operation on a single 3-pin cable possible.

## TWC-701 AND TWC-704 SYSTEM

The TWC-701 is a stand-alone adaptor that combines two standard Clear-Com intercom channels (on two separate cables) onto a single standard 3-pin microphone cable. It does this by combining one channel of intercom audio with the 30 volts DC operating power.

The TWC-704 adaptor is four channels of the TWC-701 in a single 19-inch rack mount chassis.

Clear-Com intercom products with TW functionality accept two individual channels of intercom from one single 3-pin cable. TW functionality in those products separates the intercom audio from the DC operating power.

If a TW-equipped station is connected to a standard Clear-Com intercom line (without a TW circuit), 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-701 to the intercom station, and operates in the normal Clear-Com manner.

Because the Clear-Com “call” signal function is normally accomplished by applying a DC voltage to the intercom audio line, call signaling is deleted from the Channel A line. When using TW-compatible devices, both channels will receive and transmit a call signal.

See the RS-601 and RS-603/623/R beltpack manuals for additional TW product support.

**Note:** “TW” is the designation Clear-Com uses for the system of combining the 30 volts DC operating power with the intercom audio. “TW” is derived from the “two-wire” because by combining the intercom audio with the DC operating power, a single channel of intercom—with the required operating power—can be run on only two conductors. However, because the intercom line is unbalanced audio, Clear-Com does not promote the use of single-channel operation on two unshielded conductors (i.e. “twisted pair”). If you have a specific application that requires actual two-wire operation, please contact the factory (510-337-6600) for further information.

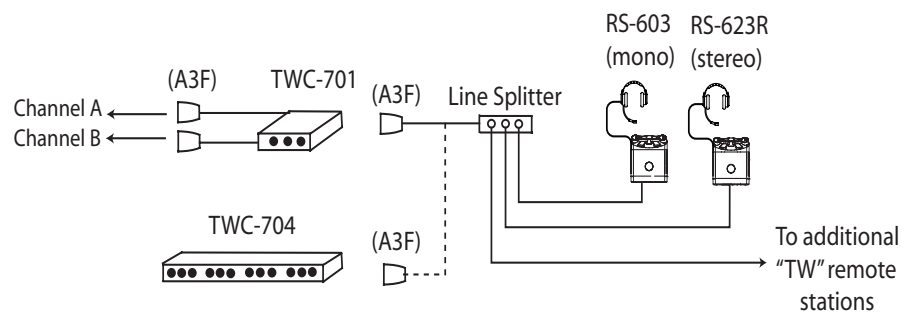


Figure 1-1: A typical system



## TWC-701 CONNECTORS AND CONTROLS

The TWC-701 has no operating controls.

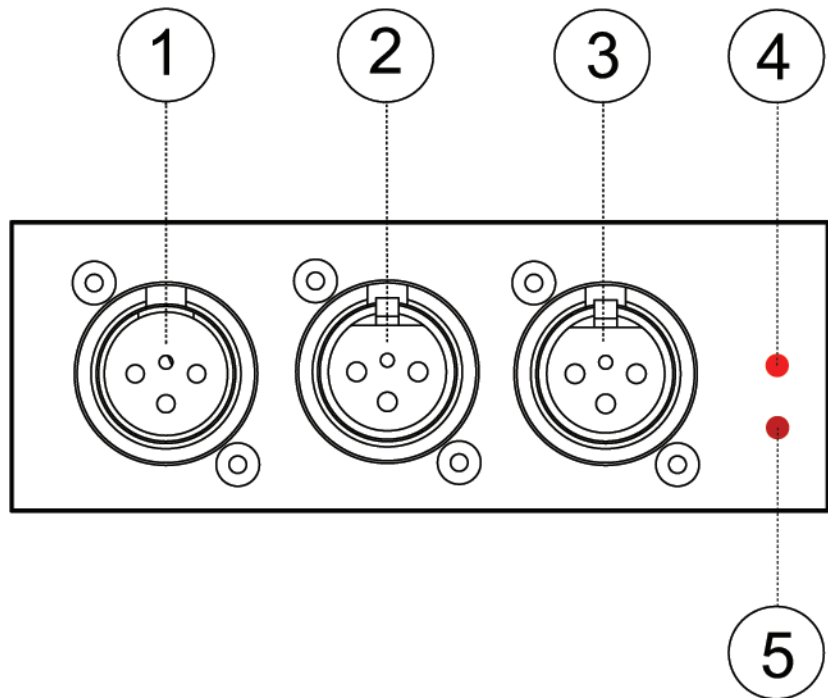


Figure 1-2: TWC-701 Rear Connectors

The TWC-701 panel contains:

1. 3-pin male XLR type output connector, labeled “TW.”
2. 3-pin female XLR type input connectors, labeled “CH B” .
3. 3-pin female XLR type input connectors, labeled “CH A”.
4. One circuit breaker reset button.
5. One red LED “short” indicator.

## TWC-701 CONNECTION AND OPERATION

1. Connect the desired two channels of standard Clear-Com intercom lines to the female Channel A and Channel B input connectors.
2. Connect the “TW” remote intercom stations to the male TW two-channel output connector. More than one station can be connected by either using the “loop-through” connectors on the individual stations, or by using passive 3-pin XLR type “splitters.”
3. The TWC-701 can supply up to 1.6 amperes of DC power before it will trip. After the short or overload condition is removed reset the circuit breaker using the reset button on the unit.
4. The TWC-701 internal current limit protects against short circuits. A short-circuit or overload on the TW line will cause the red short LED to come on. To reset the unit press the red reset button on the unit.

*Note: Only Clear-Com intercom stations equipped with a TW option should be connected to the output of the TWC-701. If a station not equipped with the “TW” option is connected to the TW intercom line, the studio portion of channel A will be loaded down, reducing volume level and changing sidetone characteristics on that channel. (However, if a non-TW equipped station is accidentally connected to the TW line, no damage will be caused to the TWC-701/TWC-704 or any system component.)*

## TWC-704 CONNECTORS AND CONTROLS

The TWC-704 has no operating controls.

The TWC-704 panel contains:

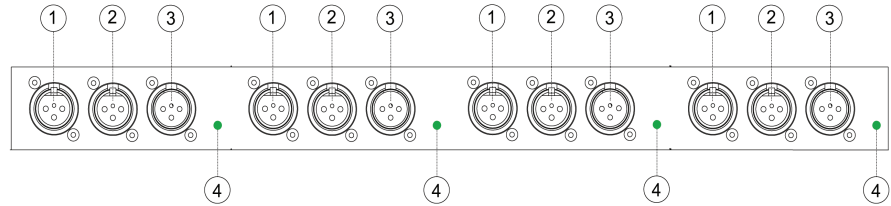


Figure 1-3: TWC-704 Rear Connectors

1. Four 3-pin female XLR type input connectors labeled “CH B”.
2. Four 3-pin female XLR type input connectors labeled “CH A”.
3. Four 3-pin male XLR type output connectors, labeled “TW”.
4. Four green LED “power good” indicators, labeled “PWR.”

## TWC-704 CONNECTION AND OPERATION

1. Connect the desired two channels of standard Clear-Com intercom lines to a pair of female Channel A and Channel B input connectors.
2. Connect the “TW” remote intercom stations to the corresponding male TW output connector. More than one station can be connected by either using the “loop-through” connectors on the individual stations, or by using passive 3-pin XLR type “splitters.”
3. The TWC-704 can supply up to 1.1 ampere of DC power before it will trip. After the short or overload condition is removed, the unit will automatically restore to normal operation.
4. The TWC-704 internal current limit protects against short circuits. A short-circuit or overload on the TW line will cause the green “PWR” LED to go out. The internal protection will automatically recover when the short or overload condition is removed.

**Note:** *Only Clear-Com intercom stations equipped with a TW option should be connected to the output of the TWC-704. If a station not equipped with the “TW” option is connected to the TW intercom line, the studio portion of channel A will be loaded down, reducing volume level and changing sidetone characteristics on that channel. (However, if a non-TW equipped station is accidentally connected to the TW line, no damage will be caused to the TWC-701/TWC-704 or any system component.)*



# 2

## TECHNICAL SPECIFICATIONS

### TWC-701/TWC-704 ADAPTORS

#### Rear Panel Connectors (TWC-701)

Intercom in  
TW

(2) XLR3F  
(1) XLR3M

#### Rear Panel Connectors (TWC-704)

Intercom in  
TW

(8) XLR3F (2 per channel)  
(4) XLR3M (1 per channel)

#### Rear Panel Controls & Indicators (TWC-701)

(1) Reset switch  
(1) Overload LED

#### Rear Panel Controls & Indicators (TWC-704)

(4) Power LED

#### Power Requirements (TWC-701)

Input Voltage:  
Input Current: (idle)  
Current Trip

20-30 VDC  
≤ 30mA  
1.6A

#### Power Requirements (TWC-704)

Input Voltage:  
Input Current: (idle)  
Current Trip

20-30 VDC  
≤ 120mA  
1.1A

#### Environmental

32° to 122° F (0° to 50° C)

#### Dimensions (TWC-701)

H 2.0" W 4" D 5.0"  
(51 x 101 x 127 mm)

#### Dimensions (TWC-704)

19 in. W x 1.75 in. H x 7.0in. D  
(483 mm x 44 mm x 1678mm)

#### Weight

TWC-701  
TWC-704

1.1 lbs. (0.503 kg)  
2.64 lbs (1.2 kg)

### **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.

# LIMITED WARRANTY

Vitec Group Communications (VGC) warrants that at the time of purchase, the equipment supplied complies with any specification in the order confirmation when used under normal conditions, and is free from defects in workmanship and materials during the warranty period.

During the warranty period VGC, or any service company authorized by VGC, will in a commercially reasonable time remedy defects in materials, design, and workmanship free of charge by repairing, or should VGC in its discretion deem it necessary, replacing the product in accordance with this limited warranty. In no event will VGC be responsible for incidental, consequential, or special loss or damage, however caused.

*VGC offers 24 x 7 customer support if you have an Extended Warranty or Service Contract.*

*Return Material Authorization (RMA) numbers are required for all returns.*

*Both warranty and non-warranty repairs are available.*

## WARRANTY PERIOD

The product may consist of several parts, each covered by a different warranty period. The warranty periods are:

- Cables, accessories, components, and consumable items have a limited warranty of 90 days.
- Headsets, handsets, microphones, and spare parts have a limited warranty of one year.
- UHF wireless IFB products have a limited warranty of one year.
- UHF wireless intercom systems have a limited warranty of three years.
- All other Clear-Com and Drake brand systems and products, including belt packs, have a limited warranty of two years.

The warranty starts at the time of the product's original purchase. The warranty start date for contracts which include installation and commissioning will commence from the earlier of date of the Site Acceptance Test or three months from purchase.

## TECHNICAL SUPPORT

To ensure complete and timely support to its customers, VGC's User Support Center is staffed by qualified technical personnel. Telephone and email technical support is offered worldwide by the User Support Center.

The User Support Center is available to VGC's customers during the full course of their warranty period. Telephone support during the warranty period will be offered at no charge between 09:00 and 17:00 according to the customer's local time zone.

In addition, for customers who purchase an Extended Warranty or Service Contract, 24-hour customer support is offered immediately upon purchase of

such agreement. For more information, contact your authorized dealer, distributor, or sales representative.

Instructions for reaching VGC's User Support Centers are given below.

**Telephone for Europe, Middle East and Africa:** +49 40 6688 4040

**Telephone for the Americas and Asia:** +1 510 337 6600

**Email:** [vitec.support@AVC.de](mailto:vitec.support@AVC.de)

Once the standard warranty period has expired, the User Support Center will continue to provide telephone support if you have purchased an Extended Warranty or Service Contract. In these cases, you will have access to telephone support 24 hours per day, 7 days per week.

## **WARRANTY REPAIRS AND RETURNS**

Before returning equipment for repair, contact a User Support Center to obtain a Return Material Authorization (RMA). VGC representatives will give you instructions and addresses for returning your equipment. You must ship the equipment at your expense, and the support center will return the equipment at VGC's expense.

For out-of-box failures, use the following contact information:

### **Europe, Middle East and Africa**

Tel: +44 1223 815000 Email: [customerservicesEMEA@vitecgroup.com](mailto:customerservicesEMEA@vitecgroup.com)

### **North America, Canada, Mexico, Caribbean & US Military**

Tel: +1 510 337 6600 Email: [customerservicesUS@vitecgroup.com](mailto:customerservicesUS@vitecgroup.com)

### **Asia Pacific & South America**

Tel: +1 510 337 6600 Email: [customerservicesAPAC@vitecgroup.com](mailto:customerservicesAPAC@vitecgroup.com)

VGC has the right to inspect the equipment and/or installation or relevant packaging.

## **NON-WARRANTY REPAIRS AND RETURNS**

For items not under warranty, you must obtain an RMA by contacting the User Support Center. VGC representatives will give you instructions and addresses for returning your equipment.

You must pay all charges to have the equipment shipped to the support center and returned to you, in addition to the costs of the repair.

## **EXTENDED WARRANTY**

If you purchase an Extended Warranty, you are also given access free of charge to the User Support Center 24 hours a day, 7 days a week.

You can purchase an extended warranty at any time during the first two years of ownership of the product. The purchase of an extended warranty extends to five



years the warranty of any product offered with a standard two-year warranty. The total warranty period will not extend beyond five years. Any purchase of an extended warranty provides 24 x 7 customer support in addition to the warranty immediately upon purchase of the warranty extension.

**Note:** VGC does not offer warranty extensions on UHF wireless intercom systems, or on any product with a 1-year or 90-day warranty.

## **SERVICE CONTRACT**

VGC also offers service contracts that provide 24 x 7 telephone support, advance replacements, training, proactive maintenance, on-site visits, and no charge for repair or replacement of equipment. For more information, contact your authorized dealer, distributor, or sales representative.

## **LIABILITY**

THE FOREGOING WARRANTY IS VGC'S SOLE AND EXCLUSIVE WARRANTY. THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY OTHER REQUIRED IMPLIED WARRANTY SHALL EXPIRE AT THE END OF THE WARRANTY PERIOD. THERE ARE NO OTHER WARRANTIES (INCLUDING WITHOUT LIMITATION WARRANTIES FOR CONSUMABLES AND OTHER SUPPLIES) OF ANY NATURE WHATSOEVER, WHETHER ARISING IN CONTRACT, TORT, NEGLIGENCE OF ANY DEGREE, STRICT LIABILITY OR OTHERWISE, WITH RESPECT TO THE PRODUCTS OR ANY PART THEREOF DELIVERED HEREUNDER, OR FOR ANY DAMAGES AND/OR LOSSES (INCLUDING LOSS OF USE, REVENUE, AND/OR PROFITS). SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR THE LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. IN ANY EVENT, TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, VGC'S LIABILITY TO CUSTOMER HEREUNDER SHALL NOT UNDER ANY CIRCUMSTANCES EXCEED THE COST OF REPAIRING OR REPLACING ANY PART(S) FOUND TO BE DEFECTIVE WITHIN THE WARRANTY PERIOD AS AFORESAID.

This warranty does not cover any damage to a product resulting from cause other than part defect and malfunction. The VGC warranty does not cover any defect, malfunction, or failure caused beyond the control of VGC, including unreasonable or negligent operation, abuse, accident, failure to follow instructions in the manual, defective or improperly associated equipment, attempts at modification and repair not approved by VGC, and shipping damage. Products with their serial numbers removed or defaced are not covered by this warranty.

This warranty does not include defects arising from installation (when not performed by VGC), lightning, power outages and fluctuations, air conditioning failure, improper integration with non-approved components, defects or failures

of customer furnished components resulting in damage to VGC provided product.

This limited warranty is not transferable and cannot be enforced by anyone other than the original consumer purchaser.

This warranty gives you specific legal rights and you may have other rights which vary from country to country.