

# KRAMER



## USER MANUAL

**MODEL:**

**Galil 2-C**

Closed-back Ceiling Speakers



# Galil 2-C Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to <http://www.kramerav.com/manual/Galil 2-C> to download the latest manual or scan the QR code on the left.

## Step 1: Check what's in the box

- ✓ Galil 2-C Full-range Closed-back Ceiling Speaker

## Step 2: Choose the best location

Ideally, locate the speakers above the main listening area. Before doing so, be sure that:

- The desired location is free of obstructions, such as electric piping, AC ducts or water lines, and so on
- There is enough space behind the mounting surface for the speakers
- The rear side of the speakers is not blocked by wall studs or other objects

## Step 3: Install the speaker

Always switch OFF the power on each device before connecting it to your **Galil 2-C** speaker. For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **Galil 2-C**.

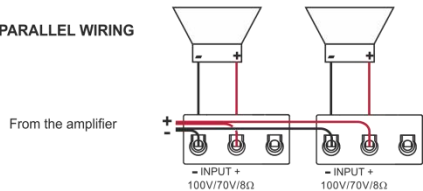
To install the speakers:

- Cut the ceiling tile
- Route the wires from the amplifier to the speaker through the ceiling
- Remove the speaker grille, adjust the tap setting and then reinstall the grille

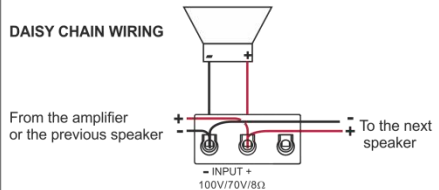


- Remove the back-can and punch out the appropriate knockout hole. Use a grommet or cable gland to pass the wires through the back-can
- Connect the speaker wires (parallel or daisy-chain) and then snap the back-can in place
- Push the spring clamps upwards so that the speaker can be inserted through the cutout hole

### PARALLEL WIRING



### DAISY CHAIN WIRING



# Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Introduction</b>  | <b>1</b>  |
| <b>2</b> | <b>Getting Started</b>                                       | <b>2</b>  |
| 2.1      | Achieving the Best Performance                               | 2         |
| 2.2      | Recycling Kramer Products                                    | 3         |
| <b>3</b> | <b>Overview</b>  | <b>4</b>  |
| 3.1      | Defining the Galil 2-C                                       | 5         |
| <b>4</b> | <b>Installing the Galil 2-C Closed-back Ceiling Speakers</b> | <b>6</b>  |
| 4.1      | Choosing the Best Location                                   | 6         |
| 4.2      | Cutting the Ceiling Tile                                     | 6         |
| 4.3      | Mounting the Speaker   | 7         |
| 4.4      | Setting up an Array Installation                             | 10        |
| 4.5      | Painting the Speaker   | 12        |
| <b>5</b> | <b>Technical Specifications</b>                              | <b>13</b> |
| <b>6</b> | <b>EN 54-24 Requirements</b>                                 | <b>14</b> |
| 6.1      | Specs according to the EN 54-24 Requirements                 | 14        |
| 6.2      | Speaker Equalizer Requirements                               | 15        |
| 6.3      | EQ Graph Shape   | 15        |
| 6.4      | Mechanical Drawing   | 16        |
| 6.5      | Galil 2-C Electrical Schematic                               | 16        |
| 6.6      | Declaration of Performance                                   | 17        |

## Figures

|            |                                       |    |
|------------|---------------------------------------|----|
| Figure 1:  | Galil 2-C Closed-back Ceiling Speaker | 5  |
| Figure 2:  | Adjust Tap Selector                   | 7  |
| Figure 3:  | Grommet/Cable Gland Installation      | 8  |
| Figure 4:  | Ceramic Terminal Pinout               | 8  |
| Figure 5:  | Galil 2-C Schematic Diagram           | 9  |
| Figure 6:  | Pushing the Spring Clamps             | 9  |
| Figure 7:  | Square Layout                         | 10 |
| Figure 8:  | Hexagonal Layout                      | 10 |
| Figure 9:  | Square Layout Parallel Wiring         | 11 |
| Figure 10: | EQ Graph shape – Requirements         | 15 |
| Figure 11: | Galil 2-C Mechanical Drawing          | 16 |
| Figure 12: | Galil 2-C Electrical Schematic        | 16 |

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# 1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 14 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

Congratulations on purchasing your Kramer **Galil 2-C** Closed-back Ceiling Speakers, which can be installed in any location that requires emergency systems according to **EN 54-24 Type A** and is ideal for general purpose applications, such as:

- Hotel lobbies and conference rooms
- Shopping malls
- Factories
- Universities and schools
- Classrooms and training rooms
- Boardrooms and presentation venues

**EN 54-24 Type A Certified** Loudspeaker for voice alarm systems for fire detection and fire alarm systems for buildings.

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## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual



Go to [http://www.kramerav.com/downloads/Galil\\_2-C](http://www.kramerav.com/downloads/Galil_2-C) to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

### 2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighbouring electrical appliances that may adversely influence signal quality
- Position your Kramer Speakers away from moisture, excessive sunlight and dust

Note that you need to use external equalization to comply with the EN 54-24 standard.



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.



Do not open the housing of the speaker; doing so may reduce the quality of the sound.

## 2.2 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at <http://www.kramerelectronics.com/support/recycling/>.

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## 3 Overview

The **Galil 2-C** is a 2.5" full-range high-performance fireproof closed-back speaker with ceramic terminals and a plastic self-extinguishing back-can. The **Galil 2-C** is specially designed to meet the requirements for fire alarm systems in public spaces.

The **Galil 2-C** speaker features:

- A multi-tap power transformer for selecting 8Ω (bypassing the transformer) or 70V/100V power settings that are suitable for an array installation
- 10W RMS power
- Intelligible and supreme clarity for both sound and music
- A thermal fuse that prevents it from burning and damaging the amplifier so that if one of the speakers in an array installation malfunctions, the other speakers can continue working undisturbed
- Heat-resistant wires that can endure high temperatures
- Ceramic Terminal Block which is heat resistant at high temperatures
- Two 20.5mm knockout holes and two 11mm knockout holes on the back-can for passing the cables through via grommet/cable gland
- Two spring clamps for quick and easy ceiling installation
- An ABS enclosure which makes it a light-weight speaker

### 3.1 Defining the Galil 2-C

[Figure 1](#) defines the **Galil 2-C**:

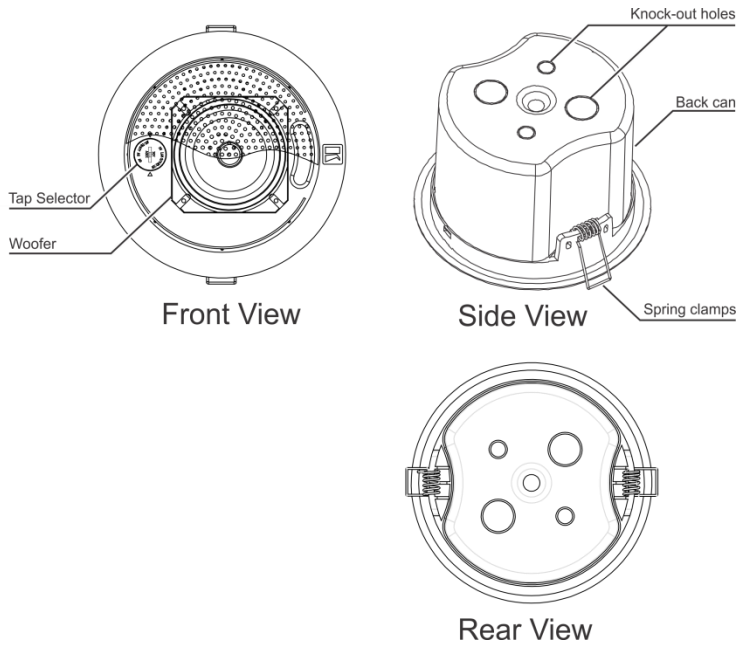


Figure 1: Galil 2-C Closed-back Ceiling Speaker



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## 4 Installing the Galil 2-C Closed-back Ceiling Speakers

This section explains how to install the **Galil 2-C**, that is:

- Choosing the best place to locate your speaker (see [Section 4.1](#))
- Cutting the ceiling tile (see [Section 4.2](#))
- Mounting a Speaker (see [Section 4.3](#))
- Setting up an array installation (see [Section 4.4](#))
- Painting the speakers (see [Section 4.5](#))

### 4.1 Choosing the Best Location

Ideally, locate the speakers above the main listening area. Before doing so, be sure that:

- The desired location is free of obstructions, such as electrical piping, AC ducts or water lines, and so on
- There is enough space behind the mounting surface for the speakers
- The rear side of the speaker is not blocked by wall studs or other objects

### 4.2 Cutting the Ceiling Tile

To cut the ceiling tile, do the following:

1. Print the cutout template from our Web site and make sure that the template size is correct (12.6cm in diameter).
2. Cut the template.  
Keep the cutout template for later use as a mask, as you may want to paint the speakers (see [Section 4.5](#))
3. Mark the opening in the correct location by tracing the hole in the template.
4. Cut out the hole according to the template or with a circular cutter set to the appropriate cutout size.  
Initially, you can cut a smaller area inside the marked hole just to be sure that the space above the speaker is clear





Figure 3: Grommet/Cable Gland Installation

5. Mount the grommet/cable gland and pass the cables through.
6. Connect the cables to the speaker (see [Figure 5](#) and [Figure 4](#)). Connect the positive (+) red cable to the + terminal and connect the negative (-) black cable to the – terminal.



Figure 4: Ceramic Terminal Pinout

You can connect the speakers in either of the two following possible layouts:

- **Wiring in parallel:** when one input connector is removed, subsequent speakers will remain connected (see [Figure 5](#))
- **Daisy-chaining:** when one input connector is removed, subsequent speakers will be disconnected (see [Figure 5](#))



For Array installation, we recommend that you connect to the speaker by passing the audio cable through a second knockout hole.

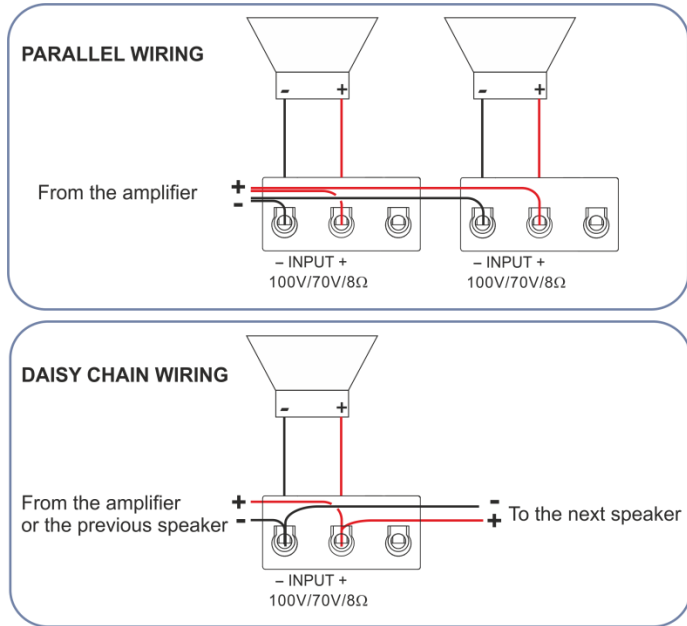


Figure 5: Galil 2-C Schematic Diagram

7. Snap the back-can in place.
8. Push the spring clamps up as close to the back-can as possible and insert the speaker through the cutout hole.  
Once inside, the springs are released and clasp the ceiling (from the inside).

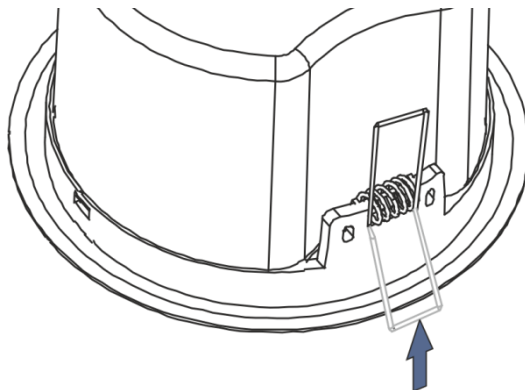


Figure 6: Pushing the Spring Clamps

## 4.4 Setting up an Array Installation

When installing **Galil 2-C** in an array installation layout, you have to define the distance between speakers as well as the layout pattern (square or hexagonal). The distance between speakers is set according to the speakers' dispersion angle, the uniformity of the coverage desired and the budget.

The coverage angle of the speaker determines the coverage area and the number of speakers required in the array installation. Two patterns are usually used for array installations, square (see [Figure 7](#)) or hexagonal (see [Figure 8](#)), depending on the shape of the installation area. The speakers are positioned according to their coverage area.

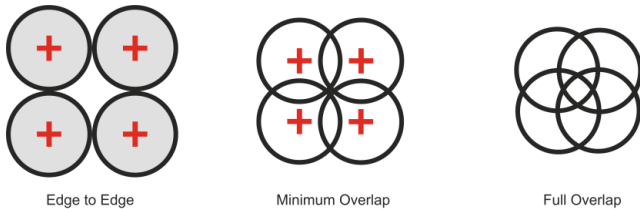


Figure 7: Square Layout

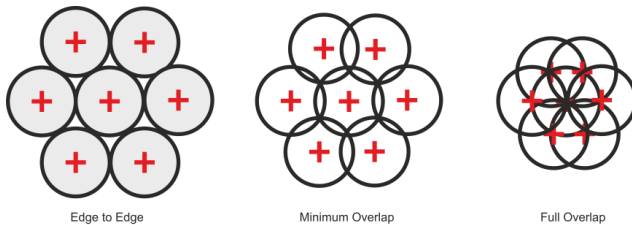


Figure 8: Hexagonal Layout

You can set the power on each speaker to get the desired power level in different installation areas.

Figure 9 shows an example of parallel wiring in a square array installation:

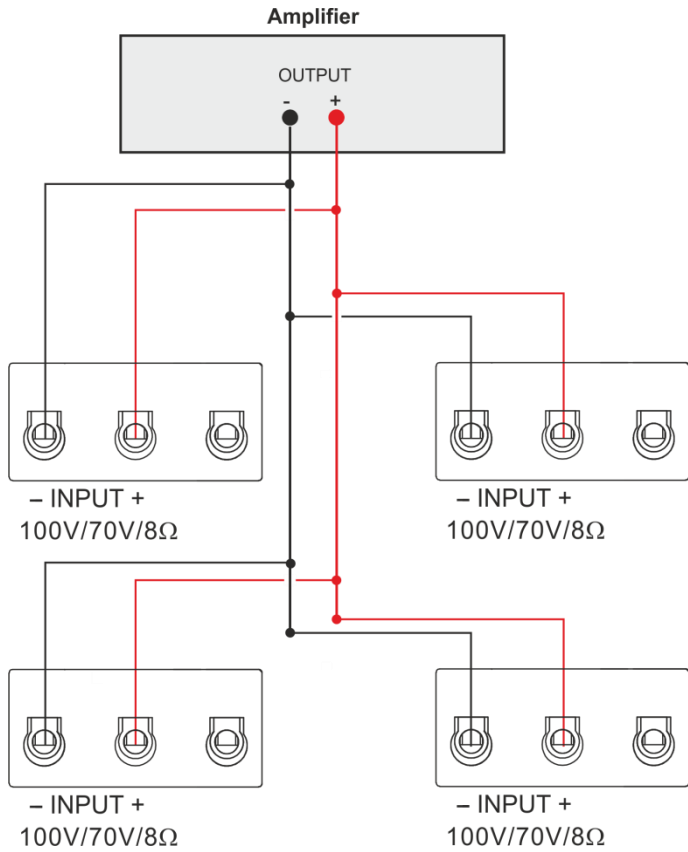


Figure 9: Square Layout Parallel Wiring

## 4.5 Painting the Speaker

You can paint the speakers before or after they are installed.

When painting before installation:

- Clean the rim and grille with mineral spirits or other light solvent that is unlikely to damage the surface
- Spray with color by holding the spray can at an angle of 45°



When spraying the grille, take care not to clog the holes in the grille as this will greatly reduce the sound quality of the speakers.

When painting after installation:

- Use the circle that you cut out of the template as a paint mask
- After you finish painting, remove the paint mask

## 5 Technical Specifications

| <b>Galil 2-C</b>  |   |
|---|---|
| <b>Audio and Power</b>  |   |
| DESCRIPTION:  | Full-range closed-back ceiling speaker  |
| FREQUENCY RESPONSE:   | 90Hz to 20kHz @ -15dB<br>150Hz to 20kHz @ -3dB  |
| WOOFER:   | 2.5" (68mm) paper cone with rubber surround   |
| IMPEDANCE:  | 8Ω (transformer tap in off position)  |
| TRANSFORMER TAPS:   | 70V – 3W, 1.5W, 0.75W, 8Ω/10W, Off (Lo-Z)<br>100V – 6W, 3W, 1.5W, 8Ω/10W, Off (Lo-Z)                                    |
| SENSITIVITY (dB):   | 83dB SPL, 1W@1m   |
| MAX SPL:  | Continuous: 93dB<br>Peak: 94.8dB  |
| POWER HANDLING:   | 10W RMS<br>30W continuous program   |
| DIRECTIVITY FACTOR (Q):   | 3.7, averaged 1kHz to 10kHz   |
| DIRECTIVITY INDEX (DI):   | 5.7dB averaged 1kHz to 10kHz  |
| INPUT CONNECTOR:  | Ceramic terminals   |
| <b>Shipping and Installation</b>  |   |
| MATERIALS:  | Frame, aluminum grille, safety cord attached to grille, Plastic back-can (Self-extinguishing ABS according to UL94 V-0) |
| OPERATING TEMPERATURE:  | -10° to +55°C (32° to 104°F)  |
| STORAGE TEMPERATURE:  | -40° to +70°C (-40° to 158°F)   |
| HUMIDITY:   | 10% to 90%, RHL non-condensing  |
| WEIGHT PER SINGLE SPEAKER:  | 0.5kg (1.1bs)   |
| SHIPPING WEIGHT:  | 0.7kg (1.544lbs) approx.  |
| DIMENSIONS:   | External diameter: 14.4cm (5.67"); cutout diameter: 12.6cm (4.88")  |
| INSTALLATION CLEARANCE:   | Mounting depth: 9.5cm (3.74")   |
| ACCESSORIES:  | cutout template (on the Web)  |
| COLORS:   | white   |
| Specifications are within a 10% tolerance and are subject to change without notice at <a href="http://www.kramerelectronics.com">http://www.kramerelectronics.com</a> |   |



## 6 EN 54-24 Requirements

### 6.1 Specs according to the EN 54-24 Requirements

|   |  |             |                  |
|---|--|-------------|------------------|
| Type of loudspeaker:  | Full-range closed-back ceiling speaker   |             |                  |
| The loudspeaker has got "fire dome" enclosure (Yes/No):           | Yes  |             |                  |
| Mounting method to the wall or to the ceiling:                    | Ceiling  |             |                  |
| Type of dedicated equalizer:                                      | Parametric equalizer, see <a href="#">Section 6.2</a> and <a href="#">Section 6.3</a>  |             |                  |
| Type of transformer:  | Mutually coupled step-down transformer   |             |                  |
| Rated noise power (W):  | 10W RMS  |             |                  |
| Rated noise power for 100V line, transformer tapping options:     | 100V – 6W, 3W, 1.5W, 8Ω/10W (BY-PASS), Off (Lo-Z)                                      |             |                  |
| Rated noise power for another lines, transformer tapping options: | 70V – 3W, 1.5W, 0.75W, 8Ω/10W (BY-PASS), Off (Lo-Z)                                    |             |                  |
| Rated impedance for each transformer tapping options:             | <b>70V</b>   | <b>100V</b> | <b>Impedance</b> |
|   | 3W   | 6W          | 1600Ω            |
|   | 1.5W   | 3W          | 3200Ω            |
|   | 0.75W  | 1.5W        | 6400Ω            |
|   | By Pass: 10W   |             | 8Ω               |
| Loudspeaker rated impedance:                                      | 8Ω   |             |                  |
| Sensitivity (dB):   | 69dB SPL, 10W@4m   |             |                  |
| S.P.L. (rated noise power/4m) (dB):                               | 79.3dB SPL, 10W@4m   |             |                  |
| Range of the supply voltage:                                      | By pass: 0 – 9V<br>Transformer in use: 0 – 100V; voltage supplied during tests: 100V   |             |                  |
| Type of a terminal block (material, quantity of terminals):       | Ceramic Terminal *1pc  |             |                  |
| Type of fuse (overload, thermal), range of work temperatures:     | 130°C thermal cutoff   |             |                  |
| Coverage angle 500Hz  | 240° -6dB  |             |                  |
| Coverage angle 1kHz   | 160° -6dB  |             |                  |
| Coverage angle 2kHz   | 110° -6dB  |             |                  |
| Coverage angle 4kHz   | 105° -6dB  |             |                  |
| Type of entry holes for conductors or cables:                     | Diameter: 11mm<br>Diameter: 20mm   |             |                  |
| Quantity of entry holes for cables:                               | 2x11mm<br>2x20mm   |             |                  |
| Min. and Max. cross-sectional of the connected conductors:        | Min. cross-sectional area: 0.32 mm square<br>Max. cross-sectional area: 0.52 mm square |             |                  |
| Working temperature, climatic category:                           | -10° to +55°C  |             |                  |
| Enclosure protection degree (IP):                                 | IP21C  |             |                  |
| Environmental type:   | TYPE A   |             |                  |

|  |   |
|--|---|
| Frequency response:  | 90Hz to 20kHz @ -15dB<br>150Hz to 20kHz @ -3dB  |
| Appearance and dimensional diagram of loudspeaker:   | See <a href="#">Section 6.4</a>   |
| Connection of the loudspeaker with the transformer drawing:  | See <a href="#">Section 6.5</a>   |
| Dimensions (max. length x max width x max. depth) of the loudspeaker with an enclosure:  | 154mm (Max. Dia., spring clamp included)*100mm (Max. Height)  |
| Diameter of the diaphragm:   | 68mm  |
| Dimensions of the magnetic gap (diameter):   | 0.625mm   |
| Weight:  | 0.5kg (1.1bs)   |
| Color:   | White   |
| Enclosure material:  | ABS765A   |
| Mark(s) and code(s) (for example, a serial number or batch code), by which the manufacturer can identify at least, the date or batch. Where any marking on the device uses symbols or abbreviations not in common use then these shall be explained. | Product Serial Number: MMYKLLNSSSSS<br>MM=Month (for example, March=03)<br>YY=Year (for example, 2015=15)<br>K=Customer code (9)<br>LL=Line number of this product on the order<br>NN=Last two digits of order number<br>SSSS=Individual Number of each speaker of this order (00001-99999) |

## 6.2 Speaker Equalizer Requirements

The following are the speaker equalizer requirements:

### Band 1

Frequency: 2kHz  
Gain : -6dB  
1/3 Octave (Q: 4.3)

### Band 2

Frequency: 5kHz  
Gain: +6dB  
1/3 Octave (Q: 4.3)

## 6.3 EQ Graph Shape

[Figure 10](#) defines the required EQ graph shape

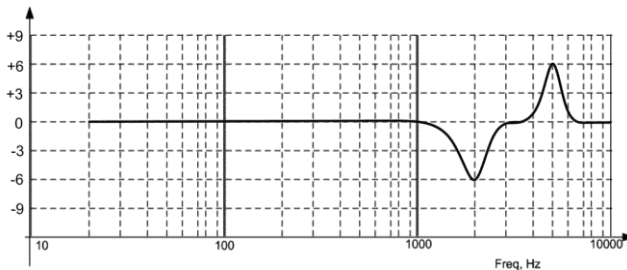


Figure 10: EQ Graph shape – Requirements

## 6.4 Mechanical Drawing

Figure 11 shows the Galil 2-C mechanical drawing:

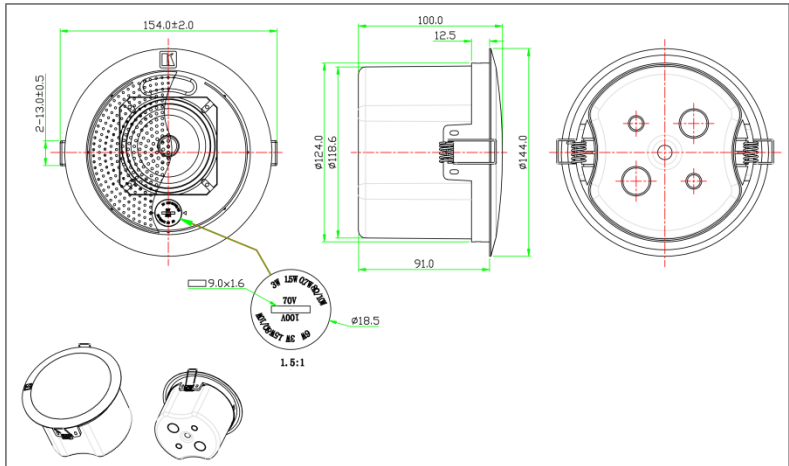


Figure 11: Galil 2-C Mechanical Drawing

## 6.5 Galil 2-C Electrical Schematic

Figure 12 shows the Galil 2-C electrical schematic:

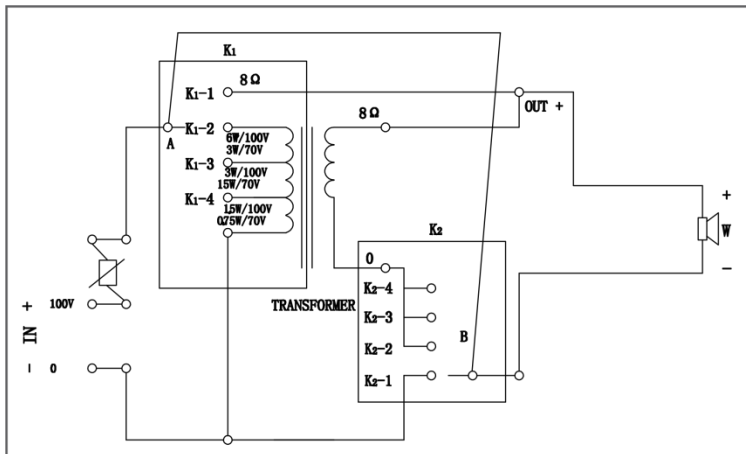


Figure 12: Galil 2-C Electrical Schematic

## 6.6 Declaration of Performance

According to Construction Products Regulation EU No. 305/2011

1. Unique Product identification code: **Galil 2-c**
2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4): **see product label and marking**
3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer: Loudspeaker for voice alarm systems for fire detection and fire alarm systems for buildings.
4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5): Kramer electronics ltd 3 Am VeOlamo st. 95463 Jerusalem, Israel
5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12(2): not applicable
6. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V: System 1
7. In case of the declaration of performance concerning a construction product covered by the harmonized standard: EN 54-24:2008 notified body No. 1488
8. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued: Not applicable, see item 7
9. Declared performance: All requirements including all Essential Characteristics and the corresponding performances for the intended use or uses indicated in 3. have been determined as described in the following table:

| No  | Essential characteristics of the product | EN 54-24:2008 | Mandated level and/or class | Assessment |
|---|--|---------------|-----------------------------|------------|
|   |  | Clause        |                             |            |
| <b>Performance parameters under fire conditions</b> |  |               |                             |            |
|   | Frequency response limit                 | 4.2           | -                           | pass       |
|   | Reproducibility                          | 5.2           | -                           | pass*      |
|   | Rated impedance                          | 5.3           | -                           | pass       |
|   | Horizontal and vertical coverage angles  | 5.4           | -                           | pass       |
|   | Maximum sound pressure level             | 5.5           | -                           | pass       |
| <b>Operational reliability</b>                      |  |               |                             |            |

|   |      |   |      |
|---|------|---|------|
| Durability  | 4.3  | - | pass |
| Construction  | 4.4  | - | pass |
| Marking and data  | 4.5  | - | pass |
| Rated noise power (durability)  | 5.6  | - | pass |
| Enclosure protection  | 5.18 | - | pass |
| <b>Durability of operational reliability, temperature resistance</b>          |      |   |      |
| Dry heat (operational)  | 5.7  | - | pass |
| Dry heat (endurance)  | 5.8  | - | pass |
| Cold (operational)  | 5.9  | - | pass |
| <b>Durability of operational reliability, humidity resistance</b>             |      |   |      |
| Damp heat, cyclic (operational)   | 5.10 | - | pass |
| Damp heat, steady state (endurance)   | 5.11 | - | pass |
| Damp heat, cyclic (endurance)   | 5.12 | - | pass |
| <b>Durability of operational reliability, corrosion resistance</b>            |      |   |      |
| Sulphur dioxide corrosion (endurance)   | 5.13 | - | pass |
| <b>Durability of operational reliability, impact and vibration resistance</b> |      |   |      |
| Shock (operational)   | 5.14 | - | pass |
| Impact (operational)  | 5.15 | - | pass |
| Vibration, sinusoidal (operational)   | 5.16 | - | pass |
| Vibration, sinusoidal (endurance)   | 5.17 | - | pass |

10. The performance of the product identified in 1 and 2 above is in conformity with the declared performance in 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4. Signed for and on behalf of the manufacturer by:

Bernard Malka - VP International Standardization

16 May 2016



## LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

### What is Covered

This limited warranty covers defects in materials and workmanship in this product.

### What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

### How Long Does this Coverage Last

One year as of this printing; please check our Web site for the most current and accurate warranty information.

### Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

### What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

### What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

### How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at [www.kramerelectronics.com](http://www.kramerelectronics.com) or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

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# KRAMER



EN 54-24 Type A



P/N: 2900-300478



Rev: 4



## SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

[www.kramerAV.com](http://www.kramerAV.com)  
[info@kramerel.com](mailto:info@kramerel.com)