

Product Manual



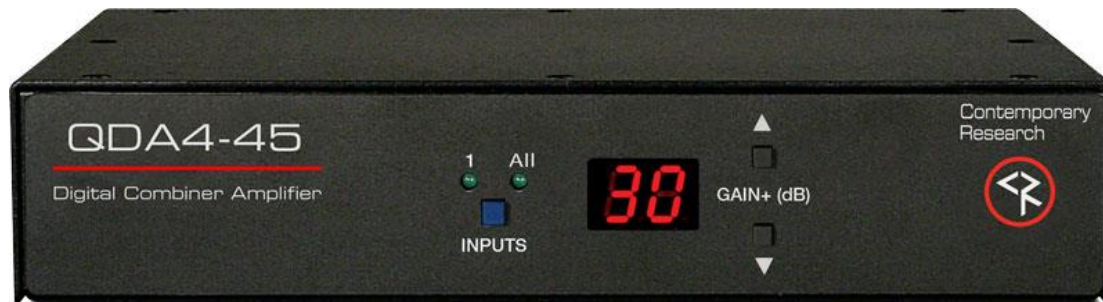
QDA4-45 RF Amp/Combiner

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Overview



The Contemporary Research QDA4-45 is an amplified RF combiner that can switch between one or four inputs, with adjustable amplification up to 50 dBmV.

Designed for QMOD HDTV applications, the QDA4-45 can receive an RF feed from QMOD modulators or QCA9-33 Active Combiners. Inputs can be switched between one or four inputs, with selectable gain.

The compact QDA4-45 mounts two across in a single rack space using CR RK1 and RK2 rack kits, and can be mixed with QMOD HDTV modulators using the same rack kits. The units are wholly designed and manufactured in the USA.

Features

- Switches between one input or four input combiner
- Adds up to 32 dBmV gain for one input, 25 dB for 4 inputs
- Provides a maximum output level of up to 50 dBmV
- Wideband, low noise amplifier
- Low power, draws less than 8.5 watts
- Compact metal enclosure, mounts 2 across in 1 RU using RK1 and RK2 rack kits

Applications

- Combine up to 4 QMOD Modulators
- Combine 4 QCA9-33 Active Combiners for 36 channels
- Use as launch amp for RF system
- Use as booster amp to merge QMOD channels with existing 50 dB analog modulator systems

Specifications



Physical

Size: 8.5" [216mm] wide x 1.75" [38mm] height (1RU) x 6.0" [153mm] deep

Weight: 1.1 lb [500g]

Enclosure: Durable metal enclosure, rack mountable

Front Panel

Input Selection, 1 or 4 inputs, Green LED indicators

RF Gain Selection with LED display, 0-25 dB for four inputs, 0-32 dB for one

Back Panel

Inputs: 4 F Connectors

Amp Out: 1 F connector

DC Power: Power 2.1 mm coaxial jack (inside center conductor positive), 700 mA maximum, 11.5 to 12.7 VDC
Use the included 12 VDC power supply, not with shared 4-6A DC power supplies.

Inputs

Max Input Level: 40 dBmV

Combiner Isolation: 38 dB typical, 30 dB minimum, 54 - 860 MHz

Return Loss: 13 dB typical for single input, 30 dB typical for all

Output

Input 1 only: 0-32 dBmV gain, low noise, linear performance through 860 MHz

All Inputs: 0-25 gain (7 dBmV loss from combiner)

Max Level: Maximum level +50 dBmV

CTB: Composite Triple Beat -60 dB, 134 channels at +44 dBmV per channel

Noise: Noise Figure 4.5 typical

Return Loss: 17 dB typical

Includes

Options PS12-1 1 A 12 VDC power supply

RK1 Rack Kit for single unit, 1 RU

RK2 Rack Kit for dual units, 1 RU

Installation

Basic Setup



The QDA-4-45 is designed for QMOD applications, but can be used with other RF channels at similar levels. **Use only the included 12 VDC power supply, do not use with shared 4 or 6 amp DC power supplies.**

Connect one source to Input 1

- Connect to the In 1 RF Input (not 2-3)
- Select **Input 1** on the front panel
- Adjust Gain up and down, 0 – 32 dB, add in input level for total RF level. For example to amplify one QMOD (typical 29 db) to 45 dB, add +16 dB of gain. For amplifying QCA9-33 Active Combiners that are fed from QMODs (typical 32 dB), add +13 dB for a 45 dB level output.

Connect up to four sources to Inputs 1-4

- Connect to the Inputs 1-4
- Select **All** on the front panel
- Adjust Gain up and down, 0 – 25 dB, add in input level for total RF level. The gain setting compensates for the 7 dB loss in the combiner, so you just add the gain setting to the input level. For example to amplify four QMODs (typical 29 db) to 45 dB, add +16 dB of gain.

RF Amp Out

The QCA9-33 accepts up to 38 dBmV RF level, and you can amplify up to +50 dB.

RF Levels

If the RF level is too strong, the TVs can act as if there is no RF signal.

- The input RF level and the QDA gain level should not exceed 50 dBmV; the goal is to average about 45 dBmV or less. If the total gain is too strong, the amplifier can be overloaded, which could appear as No Signal to TVs.
 - If you're combining one to four QMODs, the gain should be no more than 16-20 dB
 - If you're combining one to four QCA9-33s, the gain should be no more than 13-17 dB
- The RF level at the TVs should be about 0 to 20 dBmV. Digital RF channels are very flexible, and we've found that some TVs can receive the channel at about 29 dB. However, if the RF level to TVs is too high, the TVs can respond as if there is no signal.

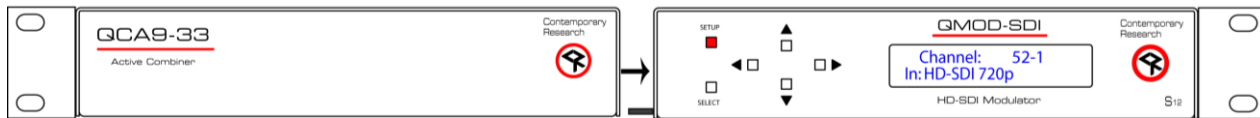
2-Way Operation

The QDA-4-45 is not designed for 2-way operation, but that could be performed using 2 sub-channel diplexers.



Rack Mounting

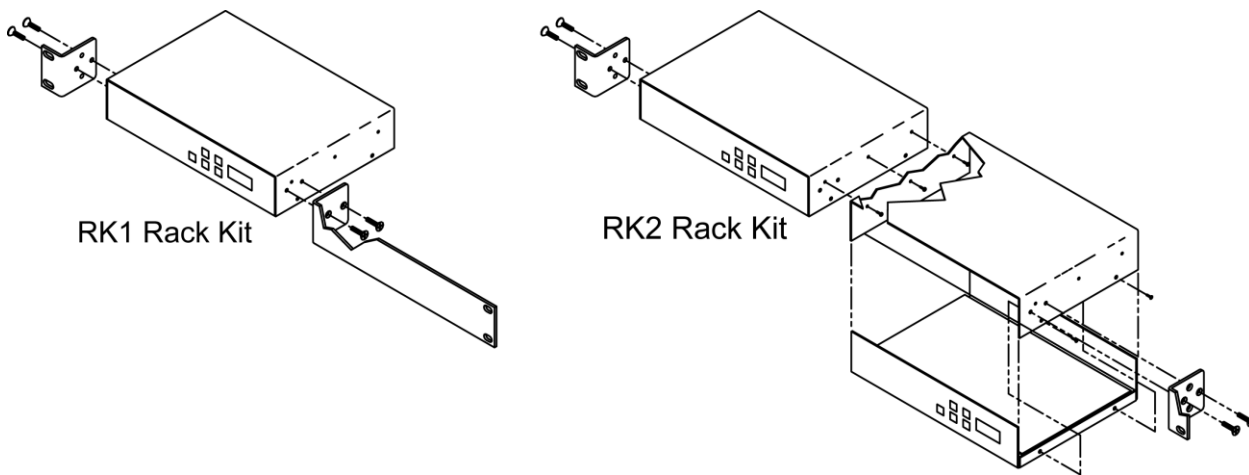
Three options are available for rack-mounting QCA9-33 Active Combiners and QMOD modulators.



RK2 Dual Rack Kit with Tie Bar Mounting

New QMOD and QCA enclosures have a slot in the bottom middle of the case. This will accept a tie bar that will lock the two enclosures together without taking the cases apart. **Do not mount next to new-generation QMODs (QDA enclosure will block flow-through ventilation).**

1. Check that your enclosures have the tie bar slot.
2. Slide the included tie bar into the side of one unit and attach with the included screws.
3. Slide the other unit into the tie bar, and attach the screws
4. Add the rack mounts to the sides.



RK1 Single Unit Rack Mount

Attach the long and short rack ears to the side and towards the front of the unit with the four (4) supplied 8-32 by 1/4" (black) countersunk screws.

RK2 – Locking Cases together

1. Remove top cover of the first unit by removing the ten (10) black screws.
2. Attach cover of first unit to the side of the second with three (3) supplied 4-40 by 1/4" (silver colored) panhead screws and split lock washers. Note that only one side of the second unit has the (3) built in nuts to accept the screws above.
3. Reinstall the bottom/chassis of the first unit underneath its cover and attach with just eight (8) of the screws removed in step 1.
4. Attach short rack ears to the side and towards the front of each unit with the four (4) supplied 8-32 by 1/4" (black) countersunk screws.

Safety Instructions

Read before operating equipment.

1. **Cleaning** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
2. **Power Sources** - Use supplied or equivalent UL/CSA approved low voltage DC plug-in transformer.
3. **Outdoor Antenna Grounding** - If you connect an outside antenna or cable system to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
4. **Lightning** - Avoid installation or reconfiguration of wiring during lightning activity.
5. **Power Lines** - Do not locate an outside antenna system near overhead power lines or other electric light or power circuits or where it can fall into such power lines or circuits. When installing an outside antenna system, refrain from touching such power lines or circuits, as contact with them might be fatal.
6. **Overloading** - Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
7. **Object and Liquid Entry** - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short out parts, resulting in a fire or electric shock. Never spill liquid of any kind on the product.
8. **Servicing** - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
9. **Damage Requiring Service** - Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power supply cord or plug is damaged.
 - If liquid spills or objects fall into the product.
 - If the product is exposed to rain or water.
 - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. An improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - If the video product is dropped or the cabinet is damaged.
 - When the video product exhibits a distinct change in performance, this indicates a need for service.

Limited Warranty and Disclaimer

Contemporary Research Corporation (CR) warrants this product to be free from defects in material and workmanship under normal use for a period of two years from the date of purchase from CR. Should such a defect occur CR will repair or replace, at their option, the defective product at no cost for parts or labor.

This warranty extends to product purchased directly from CR or an Authorized CR Dealer. Consumers should inquire from selling dealer as to the nature and extent of the dealer's warranty, if any.

All warranty claims must be shipped pre-paid to the factory. Call or fax to obtain a Return Material Authorization (RMA) number.

CR is not liable for any damages caused by any of its products or for the failure of any products to perform, including any lost profits, lost savings, incidental damages, or consequential damages. CR is not responsible for any claim made by a third party or made for you by a third party. This limitation of liability applies whether damages are sought, or a claim is made, under this warranty or as a tort claim (including negligence and strict product liability), a contract claim, or any other claim. This limitation of liability cannot be waived or amended by any person. This limitation of liability will be effective even if CR or an authorized representative of CR has been advised of the possibility of any such damages.

Some states do not allow a limitation of how long an implied warranty lasts. Some states do not allow the limitation or exclusion of incidental or consequential damages for consumer products. In such states, the limitation or exclusion of the Limited Warranty may not apply to you. This Limited Warranty gives you specific legal rights. You may also have other rights that may vary from state to state. You are advised to consult applicable state laws for a full determination of your rights.

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