



User's Manual

ZV28-MKII | Dual 18"
Powered Subwoofer

ZV28-MKII

Dual 18" Powered Subwoofer

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- Groundbreaking Performance
- Ultra-Low Notes: -3dB at 21Hz (Pair)
- Super-High Continuous Output
- Deepest High-Output Sub for its Size



Description:

The BASSBOSS ZV28-MKII Subwoofer delivers bass so low as to be at the very limits of human hearing. Notes that are simply not present with other subwoofers are fully realized by the ZV28-MKII, and frequencies that stress lesser subs are reproduced effortlessly and powerfully. The ZV28-MKII must be felt as well as heard to be truly appreciated.

Improved performance of MKII:

- Even More Deep Bass
- Increased SPL at very low frequencies
- Decreased distortion at very low frequencies
- Stiffer construction – more bracing
- Stronger grill for improved protection.
- Bold new look!

For super-low modern bass music, just two cabinets will produce exceptional levels of extraordinarily deep bass. The ZV28-MKII is designed to deliver an intensely physical experience for the audience. No other manufacturer produces a sub as powerful and low as the ZV28-MKII at a similar price point and physical size.

The ZV28-MKII was independently measured at Ultra Music Fest 2013 to achieve flat frequency response to 21Hz (-3 dB) at audience distance. A sub system of only sixteen ZV28-MKII Subs and eight Z5/D Subwoofers was used to create a legendary gig for close to 10,000 screaming fans. The ZV28-MKII utilizes extreme efficiency to supply ultra-high performance with very few subs.

Includes a 4000W amplifier with integrated, comprehensive DSP. The ZV28-MKII's are vented, direct radiating subwoofers with a large internal volume and a very low tuned frequency. Anti-standing wave baffles and pass-through dampers minimize upper resonances while very large ports maximize low frequency performance at high output. Protection systems and limiters control all manners of overload, including thermal, excursion and clipping.

The ZV28-MKII is optimized for full-power operation. It is designed to operate at full rated RMS power throughout its operating range while ensuring the woofers remain within their excursion and thermal limits. The ZV28-MKII delivers consistently flat frequency response, and a pair delivers response that is -3dB at 21 Hz. No equalization is required to achieve this response and it is available at high levels in real-world applications, continuously. The ZV28-MKII's sensitivity is achieved and maintained through careful optimization, the use of premium components and innovative, proprietary thermal management techniques. Thanks to the deep-bass sensitivity, the robust components and the prodigious power, massive low end is delivered on demand.

The ZV28-MKII is not a paper tiger. Other subwoofers can be made to look similar on paper, but come up short in the field. Beware of loudspeaker systems that require processing to achieve their claimed frequency response. Those systems are still subject to the excursion and thermal limits of their drivers. Boosting low frequency EQ to achieve extended low-frequency response on specification charts isn't the way to deliver superior results at maximum power. In fact, boosting low frequency EQ is likely to result in excessive distortion or woofer damage at full power. Under those circumstances the system cannot be utilized at full power. If limiting is applied to avert such failure, that limiting prevents the realization of the claimed frequency response at full power.

The ZV28-MKII's woofer cones are waterproofed. The cabinets are safe to use outdoors where they may encounter rain, in nightclubs where drinks may be spilled on them, or in dusty environments that may leave the drivers needing a thorough cleaning.

A two-year no-fault warranty is offered on the subwoofer drivers above and beyond the standard warranty. We are able to offer this extraordinary coverage due to the ZV28-MKII's (and all BASSBOSS subs) innovative design and engineering which utilizes the best of current technology to virtually eliminate blown drivers.

Engineered to work hard and continue to work where others fail. With the peace of mind afforded by plentiful, clean, undistorted output and comprehensive protection systems, you can confidently push the ZV28-MKII to levels and depths that would require more or bigger cabinets from other manufacturers.

ZV28-MKII | SPECIFICATIONS

Dual 18" Powered Subwoofer

Acoustical

Loudspeaker Description:	Extended Low-Frequency Dual 18" Powered Subwoofer
Frequency Response (± 3 dB):	24 – 90 Hz
Frequency Response, Pair (± 3 dB):	21 – 90 Hz
Maximum Sustained Output:	134 dB SPL, 1 meter, half-space (ground plane)
Max SPL (Peak)*	142 dB
Nominal Dispersion (H° x V°):	360 x 360 – Cardioid mode available with multiple boxes

Electrical

Amplification:	4000 Watt Continuous RMS Class D Subwoofer Amplifier
Processing:	Integrated comprehensive DSP provides high pass, low pass, phase alignment and limiting
Electrical Connectors, Amplifier:	Neutrik powerCON input (Blue) NAC3FCA, Neutrik powerCON through (Grey) NAC3FCA
Electrical Connector, Mains:	Standard US 3-pin 120V electrical plug: NEMA 5-15 (Edison), Optional electrical plugs available, including L5-30 and others, upon request.
Voltage Operating Range:	90-132VAC, 55-65Hz
Current Draw, Nominal:	564 W, 4.7A @ 120 Volts (typical, 1/8 max power)
Signal Input Connector:	XLR-F
Signal Output Connector:	XLR-M (pass-through only)

Physical

Enclosure Type:	Direct radiating, vented enclosure, optimally tuned for extremely low frequency response and excellent electrical conversion efficiency
Transducer:	2 x 18" diameter (457 mm) neodymium motor woofer with 4.5" (115 mm) copper winding voice coil and 56 mm (2.2") peak to peak excursion, waterproof fiber composite cone
Cabinet Construction:	18 mm Baltic Birch plywood, extensively braced. Equipped with 16 flypoints, 8 steel handles, 2 pole sockets, 4 large rubber feet, and 4 interlocking foot pockets
Dimensions (HxWxD):	22.5" x 42" x 42" (57.15 cm x 106.68 cm x 106.68 cm) - 23.25" (59.05 cm) high with feet
Net Weight:	225 lbs (102 kg)
Shipping Weight:	240 lbs (109 kg)
Exterior Finish:	Rugged, weatherproof, black textured, bonded high-pressure polyurethane coating
Grill:	Perforated, powder-coated steel
Pole Sockets:	2 (35 mm)
Handles:	8 Steel Handles

Optional

Flying Hardware:	Side-pull anchors and/or shoulder eye-bolts
Suspension System:	16 x 3/8"-16tpi threaded flypoints
Amplification for Installation:	Complete power package including DSP in two space rack chassis for permanent installations
Installation Version:	Available without handles and pole sockets
Transport Dollies:	Dolly cart with 4 locking casters and recesses to accept interlocking cabinet feet for transporting 1 to 3 cabinets
Covers:	Heavy-duty padded nylon transport covers for 1 or 2 cabinets
Online Information:	bassboss.com/zv28

*Peak output is calculated using "industry standard" techniques. These calculation methods create theoretical specifications that are inflated over what can actually be achieved. BASSBOSS real world output specifications are provided as "Maximum Sustained Output" ratings, which reflect actual measured, continuous output levels.

Setup Instructions:

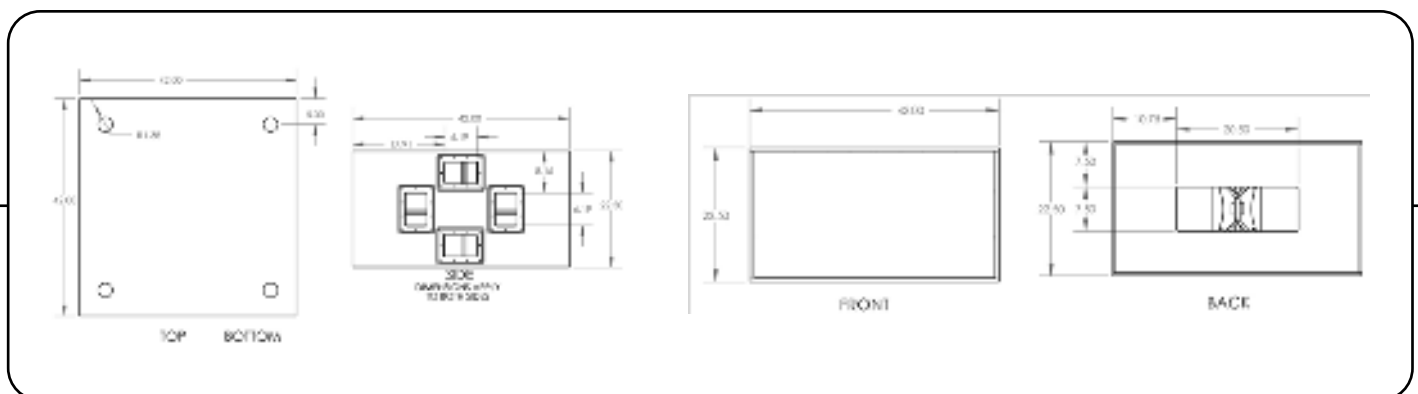
1. Place loudspeaker in the desired location. Ensure that it is secure and stable.
2. Rotate the input attenuator knob counter-clockwise to the lowest setting.
3. Connect signal from the sound source (mixer) via the XLR female input jack.
4. Connect the XLR male output to the next available loudspeaker input via an XLR cable (if applicable.)
This is a full-range pass-through connection and no processing is applied to this output.
5. Connect the Neutrik PowerCON (blue) connector to the blue power inlet socket. Do not force. To insert, align the indexing tabs on the connectors, insert the plug fully into the socket and rotate clockwise until the latches catch. To remove, pull back on the latch tab and rotate the connector counter-clockwise to the index stop, then pull outwards.
6. Work backwards from the speakers to the outlets, making all PowerCON connections before plugging in to mains power.
7. Connect the electrical plug to a power source.
8. Move the POWER switch to the ON position.
9. Rotate the input attenuator clockwise to achieve the desired sound level.

The integrated DSP includes all the required processing for safe operation and alignment with the accompanying BASSBOSS top boxes. DO NOT USE third-party outboard processing with BASSBOSS powered loudspeakers. This will not improve, and will most likely degrade the sound quality and output capacity.

When connecting multiple BASSBOSS loudspeakers in a system, signal can be passed through from one powered loudspeaker to another using XLR cables. No processing is applied to the signal as it passes through from the input to the output connectors in each loudspeaker. Signal can be routed in any sequence because each loudspeaker receives a full-range signal and applies the necessary processing in order to operate as part of the overall system. It is recommended to run signal to the nearest box first and patch to the next nearest box in sequence.

When connecting BASSBOSS speakers in a system including other brands of loudspeakers, it's recommended to connect the BASSBOSS speakers first in sequence, then connect other speakers to the pass-through outputs. This ensures that no inappropriate processing is applied to either loudspeaker.

The total power draw of one ZV28-MKII amplifier module is 15A. Only one ZV28-MKII should be connected to a 20A circuit. The typical power draw of one ZV28-MKII amplifier module is 5A. With heavy demand, the current draw can peak at 20A for brief periods but under NEMA code, a 20A breaker should sustain a peak draw of 40A for several seconds without tripping. In situations where circuits must be shared with other equipment or other brands, it's recommended to power combinations of a BASSBOSS subwoofer and a top on a circuit and to power each subwoofer and top combination on a separate circuit to reduce the chances of overdrawing a circuit and tripping a breaker.



Operation and Controls:

There are 2 control knobs on the amplifier.

1: GAIN

Provides attenuation of the input from off to full output. Use appropriate gain structure to ensure the output feeding the subwoofer doesn't reach clipping and distortion before maximum desired sound level is achieved. The amplifier has a complement of limiters and safeties to protect itself and the driver however, if audible distortion occurs, lower the level of the incoming signal.

2: EXO ADJUST

This control adjusts the effective crossover frequency allowing the subwoofer to be used with multiple sizes and styles of top boxes while minimizing out-of-bandwidth noise and phase shift in the crossover region. Rotating the EXO knob fully counter-clockwise (left) results in an effective crossover frequency of 80Hz. Rotating it fully clockwise (right) results in an effective crossover frequency of 100Hz.

3. CARDIOID SWITCH

Toggle Switch allows selection between NORMAL mode and CARDIOID mode.

With the switch in the NORMAL (up) position, the speaker is in normal operating mode and any number of cabinets can be arrayed side-by-side facing the same way when they are all in NORMAL mode.

When CARDIOID operation is desired, one or two cabinets must be used in NORMAL mode and at least one cabinet must be placed in CARDIOID mode and its position reversed relative to the other cabinet(s). The ideal ratio is 2 cabinets in NORMAL with one CARDIOID cabinet between them vertically or horizontally.

Reduced Level Area	NORMAL >> << CARDIOID NORMAL >>	Audience Audience Audience
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The NORMAL mode cabinet(s) are used with the woofer facing towards the audience. The CARDIOID mode cabinet is rotated with the woofer away from the audience and the CARDIOID SELECT SWITCH in the CARDIOID (down) position.

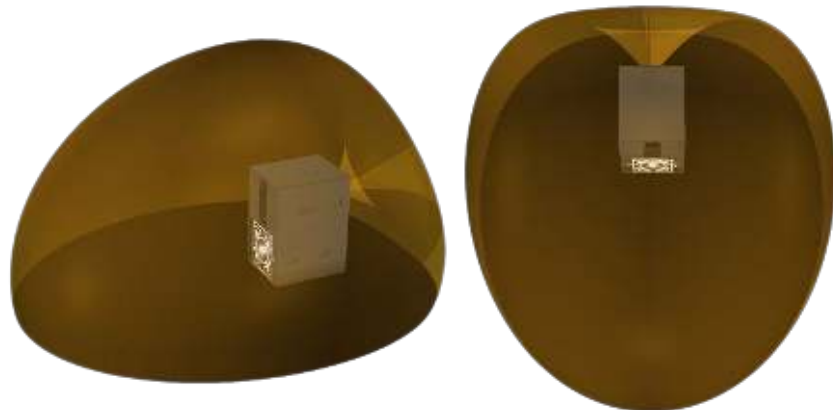
The cabinet in CARDIOID mode should have the EXO knob at the lowest level, rotated fully counter-clockwise. The EXO setting on the NORMAL mode cabinet(s) can be set to taste but all cabinets in NORMAL mode should be set the same.

Note: When the speaker is in CARDIOID mode, the green PWR LED is disabled because it will be facing the audience. The speaker will still power up and play.

When only two cabinets are used, the cabinet in CARDIOID mode can be placed on top of the cabinet in NORMAL mode. The cabinet in CARDIOID mode can also be placed adjacent to the NORMAL mode cabinet, with the NORMAL mode cabinets placed farther from the stage or area where reduced level is desired. When only 2 cabinets are in use, the CARDIOID mode cabinet GAIN should be reduced by 3dB. The greatest level reduction occurs on axis with a line drawn from the center of the NORMAL cabinet's baffle, through the center of the CARDIOID cabinet's baffle.

Reduced Level Area	<< CARDIOID (-3dB) NORMAL >>	Audience Audience Audience
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Three-dimensional representation of cardioid output pattern.





Troubleshooting:

If, after following the above instructions for setup, you have no output from the loudspeakers:

Verify that the green power (ON) LED is lit. If not, check the following:

(Note: The ON LED is disabled when CARDIoid mode is selected. To check for power, switch to NORMAL mode to illuminate the LED)

1. Is the power cord plugged into a live outlet?
2. Is the Neutrik PowerCON connector rotated into the locked position?
3. Is the Power Switch on?

If the green power LED is on, check the following:

1. Is the signal cable connected to the input?
2. Is the signal cable connected to an operating output at the other end?
3. Is the signal flowing to the input? Check the integrity of the cable by using a different cable.
4. Is the attenuator turned all the way down or at a very low level?
5. Is the signal flowing to the input full-range? Filters in the signal may remove the operating frequencies of the loudspeaker receiving them.

Amplifier Flash Sequence Codes:

Flash Sequence Codes for Warning Indicators and Protection Modes (Seen on Amp LED)

Long flashes followed by short flashes:

- 1-0 GROUND NOT CONNECTED: Amp still runs. Blinks 10 times on power-up then stops. Check power cord and outlet wiring.
- 1-1 LINE HOT AND NEUTRAL REVERSED: Amp still runs. Blinks 10 times on power-up then stops. Check power cord and outlet wiring.
- 1-2 GROUND NOT CONNECTED IN 240V MODE: Amp still runs. Check power cord and outlet wiring.
- 2-0 GFI TRIP: Amp shuts down. Power cycle to restore.
- 3-0 OVERHEAT SHUTDOWN: Amp shuts down. Restarts when temperature falls.
- 3-3 THERMAL LIMITER ACTING: Gain reduced to limit heat buildup. Amp still runs.
- 4-1 FAULT FROM GATE PCB WHILE AMP WAS WORKING: Amp shuts down. Service Required.
- 4-2 FAULT FROM PFC: (240V option only) Amp shuts down. Service Required. (May reset with power cycle if false triggered.)
- 4-3 GFI MALFUNCTION: Amp shuts down. Service Required.
- 4-5 FAULT FROM GATE PCB: Amp shuts down. Service Required.

- 4-7 **BROWNOUT AT POWER-UP:** Amp shuts down. Power cycle to restore. Check supply voltage.
- 4-8 **UNABLE TO START AMPLIFIER:** Power Cycle to restore. Check or eliminate power conditioner.
- 5-0 **OVER-VOLTAGE:** Amp turns off or won't start. (Seen on 120V versions when connected to 240V outlets.)
- 6-0 **UNDER-VOLTAGE:** Amp turns off or won't start. (Seen when Generators are overdrawn or long extension cords are in use.)
- 6-6 **LINE LIMITER ACTING:** Amp still runs. Output reduced to limit current draw.

Need more assistance? Support is available via phone or email. Email: family@bassboss.com Phone: 855-822-7770 toll free

Safety Information:

Important information regarding safety and the use of your loudspeakers:

Never stand in the immediate vicinity of loudspeakers driven at a high level. Professional loudspeaker systems are capable of causing a sound pressure level detrimental to human health. Seemingly non-critical sound levels (from approx. 95 dB SPL) can cause hearing damage if people are exposed to it over a long period. To prevent potentially dangerous exposure to high levels of acoustic pressure, anyone who is exposed to these levels should use adequate protection devices.

When a transducer capable of producing high sound levels is being used, it is necessary to wear ear plugs or protective earphones. See the manual technical specifications to know the maximum sound pressure level.

In order to prevent accidents when setting up the loudspeakers or loudspeaker stands, make sure they are standing on a firm surface.

Ensure that all additional hardware, fixings and fasteners used for installation or mobile deployment are of an appropriate size and load safety factor.

Pay attention to the manufacturers' instructions and to the relevant safety guidelines.

Regularly check the loudspeaker housings and accessories for visible signs of wear and tear, and replace them when necessary.

Regularly check all load bearing bolts in the mounting devices.

Caution: Loudspeakers produce a static magnetic field even if they are not connected or are not in use. Therefore make sure when erecting and transporting loudspeakers that they are nowhere near equipment and objects which may be impaired or damaged by an external magnetic field. A distance of 3 feet (1m) should be maintained between loudspeakers and sensitive equipment such as CRT monitors or magnetic storage media.

Never attempt to carry out any operations, modifications or repairs that are not expressly described in this manual.

Contact your dealer or BASSBOSS support if the product is not functioning properly.

BASSBOSS strongly recommends this product be installed by a qualified, professional installer who can ensure correct installation and certify that it is installed in compliance with the regulations in force.

The entire audio system must comply with the current local standards and regulations regarding electrical systems.

Important Notes:

To prevent the occurrence of noise on signal cables, use shielded cables only. Avoid routing signal cables close to equipment that produces high-intensity electromagnetic fields such as transformers, power cables and loudspeaker wires. Do not coil excess power cable. Do not coil or wrap power cables and signal cables together.

Thanks for being BASSBOSS Family!

WARRANTY INFORMATION

Our extensive "Sound Defense" transferable warranty covers all **BASSBOSS** products.

STANDARD CABINET WARRANTY

BASSBOSS loudspeaker cabinet integrity, including all joinery, fasteners, handles and wood, is warranted against defects in materials and workmanship for a period of six (6) years from the date of purchase. This warranty does not cover items that are intended to wear and can be replaced if worn or damaged. Examples of items not covered by this warranty are cabinet feet, grills and the finish or coating applied to the cabinet.

ENHANCED COMPONENT WARRANTY

BASSBOSS amplifiers and electronic components are covered against failures due to defects in materials and/or workmanship for a period of three years from the date of purchase.

NO WORRIES WOOFER WARRANTY

Transducers, including burned or open voice coils in subwoofers, are covered for two years from the date of purchase.

OUR SUPPORT

It is our goal to provide trouble-free loudspeakers. That objective begins as part of the design phase and continues on through to any service you may require. In order to be able to provide the lowest possible failure rate, the best possible warranty service and the fastest turn-around time, we request that you contact us immediately if you notice any problem with your system, and before you attempt any repairs. We can provide the best and fastest solution if we know the details of the problem before any repair attempts are made. Often **BASSBOSS** technicians can troubleshoot problems that may arise and no repair or further service will be necessary.

Warranty support is a service, and part of that service includes helping you prevent failures and minimize repair and shipping costs. Please do not ship products without first obtaining a return authorization number by calling 855-822-7770 toll-free or by emailing family@bassboss.com. **BASSBOSS** service technicians will provide assistance and instructions on shipping and packaging requirements specific to your service needs.

WARRANTY LIMITATIONS

During the warranty period, if your loudspeaker malfunctions or fails due to any defect in components or manufacturing, the failed parts will be repaired or replaced. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse. Warranty coverage and eligibility will be determined upon inspection by **BASSBOSS** personnel. This warranty does not cover labor other than that authorized and performed by **BASSBOSS** personnel. Service will be performed upon the return of the failed unit, together with its original sales receipt or other proof of purchase, to **BASSBOSS** or an Authorized Service Facility.

Purchaser is responsible for all costs of shipping and handling. Cosmetic damage is specifically excluded from this warranty. This warranty is rendered void if service, repairs and/or modifications are attempted or made by anyone not specifically authorized by **BASSBOSS** to perform said services. Please contact **BASSBOSS** or your local **BASSBOSS** dealer before attempting any repairs and before shipping parts in for service. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. For more information concerning BASSBOSS service and warranty policies please contact us at (855) 822-7770 toll-free.

EXPORT WARRANTY

BASSBOSS products can be purchased worldwide. In countries without local **BASSBOSS** distributors, product requiring service must be shipped back to the US for warranty repairs. In most cases, the entire cabinet will not need to be shipped. Generally only the individual affected parts will need to be shipped to the factory for servicing. Please contact **BASSBOSS** before attempting any repairs and before shipping parts in for service.

SHIPPING AND PACKAGING

Please package your returns safely and securely. **BASSBOSS** does not cover damage that occurs in transit. Freight insurance is highly recommended.

FCC Compliance Notice:

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.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Dual 18" Powered Subwoofer



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