

The logo for Ex Machina features the words "EX" and "MACHINA" stacked vertically in a bold, sans-serif font. The text is centered within a large, stylized circular graphic composed of three concentric, slightly offset curved lines that create a sense of motion or a partial circle.

EX  
MACHINA

## TITAN MANUAL

On behalf of our entire team at Ex Machina Soundworks, thank you for choosing Titan, and welcome to the family. Whether you use them as professional tools, for your own listening pleasure, or maybe even for a bit of both, we are confident they will reward you with a level of accuracy and realism that will redefine what you come to expect from a loudspeaker.

To activate your extended warranty, and to receive product updates, please register your serial number at [www.exmachinasound.com/register](http://www.exmachinasound.com/register)

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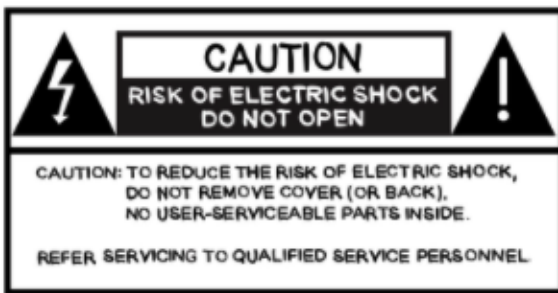
## SECTION 1: IMPORTANT SAFETY INFORMATION

**NOTE** • The information in this manual is subject to change without notice. The manufacturer assumes no responsibility for any errors that may appear in this manual. The reproduction, transmission or use of this document or contents is not permitted without express written authorization.

**WARNING** • Before using, read this manual to ensure that you have a thorough understanding of the correct usage and handling of these loudspeakers. Incorrect handling of this product may result in personal injury or physical damage. The manufacturer assumes no responsibility for any damage caused by mishandling that is beyond normal usage defined in the manuals for these speakers.

Please read the following safety instructions before setting up your system. Keep the instructions for further reference.

Please heed the warnings and follow the instructions.



### **DANGEROUS VOLTAGE:**

The lightning flash symbol here is intended to alert the user to the presence of dangerous voltage within the product's enclosure or in normal operation that may be of sufficient magnitude to constitute a risk of electrical shock.



### **ATTENTION:**

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



### **STOP:**

The hand inside the circle with a line through it is intended to alert the user of important precautions the user must take when installing, handling and operating the appliance.



**Caution:** To reduce the risk of electric shock, do not open the loudspeaker. There are no user-serviceable parts inside. Refer servicing to your **dealer or qualified service personnel**.



Never replace any fuse with a value or type other than those specified. Never bypass any fuse.



Ensure that the specified voltage matches the voltage of the power supply you use. If this is not the case, do not connect the loudspeakers to a power source! Please contact your dealer or distributor to resolve this issue.



This product, as well as all attached extension cords, must be terminated with an earth ground three-prong AC mains power cord like those supplied with the product. To prevent shock hazard, all three component contacts must always be used.



Always switch off your loudspeakers before connecting or disconnecting any cables. Never turn your system on after you've turned your speakers on. Doing so can result in damage to the loudspeaker.



To completely disconnect from AC mains, unplug the power supply from the power socket. The loudspeaker should be installed near the mains connection, and you should ensure easy access to the power socket to disconnect the device if necessary.



Protect the power cord from being walked on or pinched particularly at the connectors and sockets, as well as at the rear of the loudspeaker.



Unplug this loudspeaker during lightning storms or when unused for long periods of time. Always keep electrical equipment out of the reach of children.



Do not expose this product to rain or moisture, never wet the inside with any liquid and never pour or spill liquids directly onto this unit. Please do not put any objects filled with liquids onto the speaker.



Use only with stands that are rated to handle the weight of your loudspeaker. Additionally, make sure the stand you use is able to support the physical dimensions of the loudspeaker. These loudspeakers are heavy; please take proper precautions when lifting the loudspeaker into place. In the case of Quasar, we recommend two people assist. Failing to take these precautions can result in personal injury.



Always ensure your cables are tested. Bad or defective cables can harm your loudspeakers as well as result in the introduction of noise, hum, crackling, etc.



Avoid using flammable or combustible chemicals for cleaning **ANY** audio components.



Install in accordance with the instructions explained in this manual.



Never expose this product to extremely high or low temperatures.



Never operate this product in an explosive atmosphere.



**BE AWARE:** High SPL can damage your hearing! Please avoid getting too close to the loudspeakers while using them at high volumes.



**DO NOT TOUCH THE TWEETER!** Doing so will result in a replacement charge, as it will not be covered under your warranty. Additionally, be aware that the drivers in these loudspeakers emit a magnetic field, and can subsequently be damaged by magnetic items such as rings, necklaces etc.



Please keep all magnetically sensitive items at least 1.5 feet (0.5m) away from the loudspeaker.



You must ensure free airflow behind the speakers to maintain sufficient cooling, with a minimum distance of at least 4 inches (100mm) to any wall.



Avoid exposing the loudspeaker to any open flame.



Do not expose the loudspeaker to water. Do not set up the loudspeaker near a water source.



Use a dry cloth or duster for cleaning. Be careful not to touch the tweeter with any rough or rigid material. Doing so can damage the tweeter.



Do not to install near any intense heat sources such as radiators, hot air vents, stoves, or other equipment [including amplifiers] that produce heat.



Do not disconnect the ground wire in the plug. An earthed plug has live and neutral prongs, plus a third prong for grounding purposes which is included for your safety. If the provided plug does not fit into your socket, consult an electrician to have the socket replaced.



Only use attachments/accessories specified herein.



Allow 25-30 seconds after power on for the DSP to boot up before sending audio signals to the loudspeaker. Additionally, always allow 45 seconds for complete DSP shutdown after turning the loudspeaker off before turning it back on again. Failure to do so may result in memory and startup errors.



**All servicing must be performed by qualified service personnel.**

Servicing is required when the loudspeaker has been damaged in any way, e.g. if the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the individual drivers (such as fingers, necklaces), careless handling or if the loudspeaker has been exposed to rain or moisture, does not operate normally, or has been dropped.

## SECTION 2: KEY FEATURES OF TITAN



### COAXIAL WOOFER/TWEETER

Titan's 15cm coaxial was adapted and reimagined for full range use from the 15cm coaxial designed for Ganymede. While a larger overhung surround was necessary to achieve the higher excursion demanded from a 2-way design, Titan's coaxial otherwise retains all of the technological attributes that make our drivers truly exceptional performers. Below are three of the key characteristics that define our transducer design philosophy.

1. The same 25mm Composite Sound Metamodal TX™ diaphragms found in Ganymede, Pulsar and Quasar are deployed in Titan's dome tweeters as well. Woven from the same Textreme™ spread tow carbon fabric as our midranges, and leveraging the unique, audio specific expertise of Composite Sound, the fiber architecture and geometry of this diaphragm has been fully optimized not just for stiffness and directivity, but to actively control resonances and modes. The end result is pistonic response to nearly 40kHz, and such precise control of breakup that a typical driver exhibits less than .1% THD+N power average in the all critical 2-10kHz midrange.

2. The 15cm Composite Sound Metamodal TX™ woofer diaphragm is identical to Ganymede's. It remains a perfect piston over two octaves past its in use frequency range, and its optimized ratio of radial to circumferential stiffness helps to linearize off-axis behavior as we approach our 2khz crossover. The diaphragm is precisely shaped to behave as an optimized waveguide for the concentric tweeter, and the geometry of the tweeter diaphragm has been further optimized to load this waveguide.

3. The FEA optimized ferrite motor structure and high performance spider bring distortion performance nearly on a par with our flagship neodymium systems in Pulsar and Quasar, and feature the same new copper shorting sleeve to lower high frequency inductance.

## **CABINET**

While fully sealed like all our loudspeakers, Titan is the first loudspeaker in our line to depart from our traditional use of Valchromat, opting instead for an extraordinarily rigid aluminum extrusion, which comes with several benefits for the application. First, much thinner panels are necessary to achieve an extremely inert enclosure, which has helped keep the physical footprint of these tiny object oriented surrounds to a minimum. Secondly, the ½" rear baffle is threaded with hard points for standard MIS-D 75x75mm and 100x100mm VESA mounting points, allowing for a highly flexible array of mounting deployments. **PLEASE NOTE THAT WE REQUIRE ALL 8 MOUNT POINTS TO BE SECURED FOR PROPER SAFETY, ESPECIALLY IN OVERHEAD DEPLOYMENTS THAT DO NOT PLACE PRIMARILY SHEAR LOAD ON THE MOUNTS!** We have tested and endorse solutions from Triad Orbit, Iso-Acoustics and Spacelabs Systems for mounting. **WE STRONGLY DISCOURAGE THE USE OF LOWER QUALITY CONSUMER MOUNTING HARDWARE, AS WE CANNOT GUARANTEE THE ROBUSTNESS OF THE FASTENING HARDWARE PROVIDED WITH THESE SOLUTIONS. ALWAYS PERIODICALLY (AT LEAST TWICE A YEAR) EXAMINE ALL FASTENERS TO ENSURE A TIGHT CONNECTION AND NO WEAR OR DEGRADATION OF THE THREADS!**

## **AMPLIFIERS**

All our loudspeakers employ second generation Hypex Ncore amplifier modules, which combine high efficiency with ultra-low distortion and output impedance. Titan uses an individual NC122MP module per satellite, which provides the woofer with 100W and the tweeter with 50W (voltage limited). Titan is sold exclusively in packs of four, and comes with an included 2RU DSP and amplifier pack that can power all four modules. **ALWAYS LEAVE AT LEAST 1RU OF VENTILATION SPACE ABOVE AND BELOW THE AMPLIFIER PACK! FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE ELECTRONIC COMPONENTS.**



## DSP & CONVERSION

The final, “secret sauce” of our loudspeakers is our proprietary, in-house DSP deployment and calibration technology. The Titan AMP/DSP packs employ two 5th generation SHARC+ DSP processors, as well as flagship AKM AK4493 and AK5572 based discrete conversion. As the final step in production, a unique, serial number specific measurement and calibration is applied that best fits the average response of all four satellites in the system, linearizing the frequency response to +/- 2db, and the phase response to +/- 15° across the entire specified range.

## SECTION 3: INITIAL SETUP

### UNBOXING

Inside each box you should find:

- Four Loudspeakers
- One 2RU Amplifier/DSP Pack
- One 6 foot IEC cable

Please observe the following steps to safely unpack your loudspeaker:

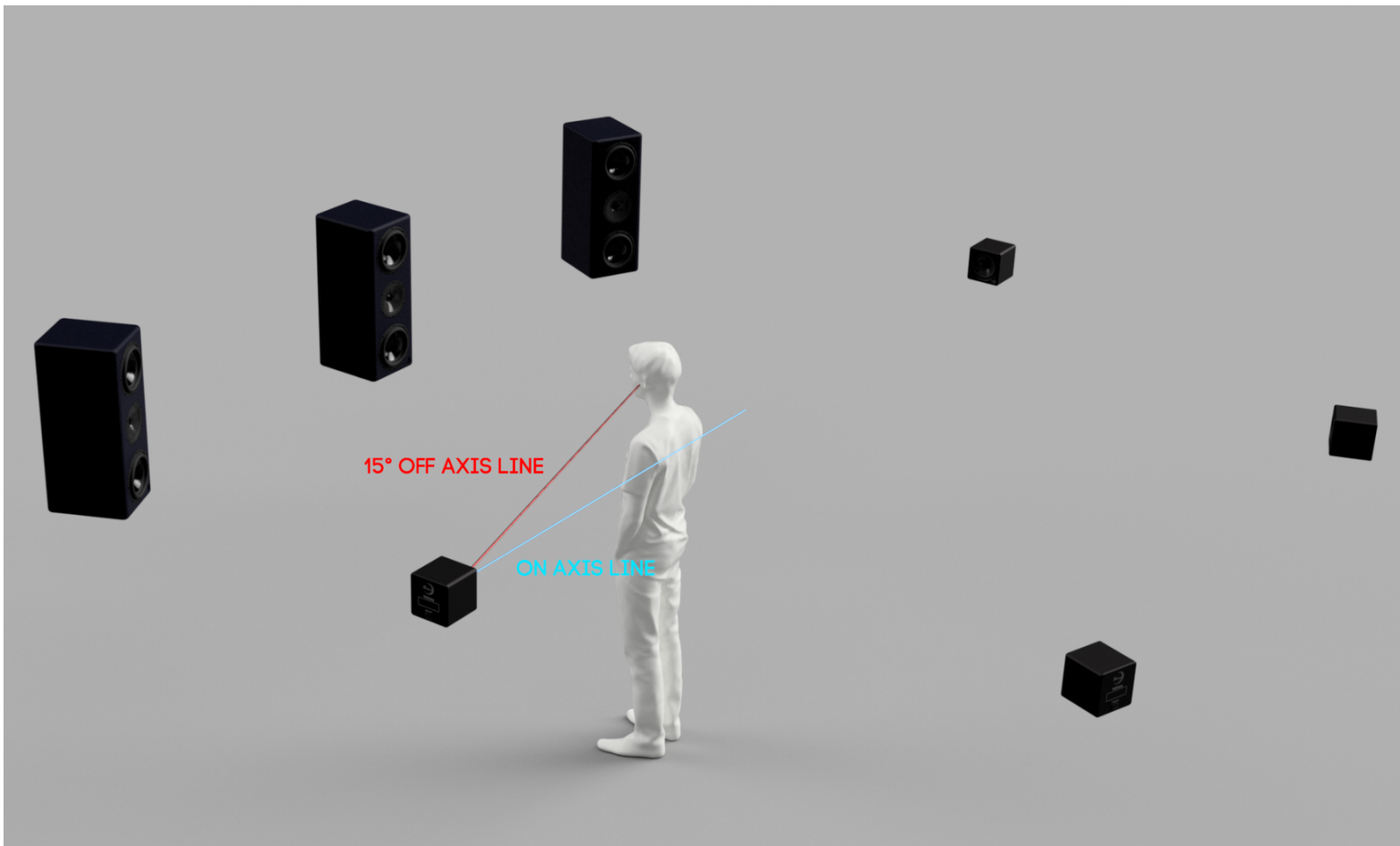
1. Begin by placing the box sideways with the widest side down.
2. Cut the tape from the bottom of the box.
3. Fold the bottom box flaps against the rest of the box, tucking the flap that is towards the floor underneath the box.
4. Stand the speaker back up on the now open bottom of the box.
5. Lift the box away from the speaker and foam inside.
6. Remove the top foam insert to release the edge of the front foam insert protecting the drivers.
7. Carefully remove the front foam insert from the bottom insert.

**8. PLEASE DO NOT TOUCH THE TWEETER!** (While our new Composite Sound Metamodal TX™ diaphragms are fairly mechanically robust, physical damage resulting from a strike will result in a replacement charge, as it will not be covered under your warranty.)

## INITIAL SPEAKER PLACEMENT

Because of the outstanding off-axis coherence and wide sweet spot of our designs, Titan is fairly forgiving of relative room placement, though we have designed it exclusively with surround and object-based applications in mind, so always refer to standard installation requirements for the given standard you are working within. However, we do recommend the following tips and tricks to get the most out of Titan in any surround or object based environment.

1. When adjusting toe-in, we suggest aligning your primary listening position  $15^\circ$  off-axis from the direct tweeter angle. This listening position very closely tracks our  $90 \times 90^\circ$  conical power average, and in the case of Titan, will obviate any direct on axis magnitude deviations from the surround geometry. This suggestion is applicable to any number of object points, but below is an illustration of a five channel surround setup as a demonstration of this principle.



2. To avoid coupling resonances and low frequency deterioration, we recommend installing our loudspeakers on high quality stands with load appropriate decoupling, or on high quality VESA mounts from suppliers such as Triad Orbit, Iso-Acoustics or Spacelabs Systems.

3. Because Titan is a true point source, and uses a cuboid cabinet, no specific orientation in space is necessary for optimal performance. However, for proper imaging and separation, **please ensure the speakers are at least 3 feet apart tweeter to tweeter.**

4. Out of the box, Titan is linearized to 80hz flat, and F6 at 58hz. Loading adjustments are available on the amplifier pack to adjust response for on-wall mounting (**O.W.**) or full space mounting (**F.S.**) when placed in free space on a stand or other surface. **We recommend a crossover point no lower than 80hz for use as surrounds. High SPL content below 100hz can cause audible turbulence at the annular ring between the tweeter and the woofer.**

## SECTION 4: CONNECTIONS AND CONTROLS



### 1. IEC INLET

Titan uses auto-switching power supplies, and will automatically adapt to 110/220v power operation. Should you ever need to replace the provided 6 foot IEC cable, please ensure you use a properly grounded, 3-prong IEC of at least 16AWG. **Never use a 2-conductor power cable or leave the ground disconnected.**

### 2. POWER INDICATOR

Two white LED indicator will illuminate when the loudspeaker is switched on and operational. Please allow 25-30 seconds after power on for the DSPs to boot up before sending audio signals to the loudspeaker. **Additionally, ALWAYS allow 45 seconds for complete DSP shutdown after turning the amplifier off before turning it back on again. Failure to do so may result in memory and startup errors.**

### 3. XLR INPUTS

The XLR connectors provide a balanced analog input for each channel, with a nominal full scale level of 2vrms (+8dbu) in High Gain Configuration, or 8vrms (+20dbu) in low gain configuration. **By default the amplifier packs are configured for low gain configuration, as this offers the best resolution in the context of typical professional operating voltages.**

High gain may be requested at purchase as a factory configured option. While the amplifier voltage gain for each driver is precisely right sized to help prevent long term damage to the drivers at clipping, **do not overload the input stage for extended periods of time.**

#### **4. 4-POLE SPEAKON OUTPUTS**

Each Titan satellite is powered by an individual stereo NC122MP amplifier module, with discrete amplifier channels for each woofer and each tweeter, and the same high precision, phase corrected digital crossovers found in our larger loudspeakers. **As such, 4-pole SpeakON cables are required for each speaker output.** We recommend at least 16/4 AWG cable for runs up to 10 feet, at least 14/4 AWG cable for runs up to 20 feet, and 12/4 AWG cable for runs in excess of 20 feet.

#### **5. PROCESSING CONTROLS**

Due to the precision and computational intensity of our proprietary calibration process, the full phase and magnitude calibration introduces approximately 46ms of latency. The “**H.P.**” (high precision) setting reflects this complete phase and magnitude calibration. For those applications such as tracking where minimal latency is necessary, the “**L.L.**” (low latency) setting removes the phase calibration and applies only a magnitude calibration, which reduces the total system latency to approximately 3ms. **Always make sure all loudspeakers are set to the same processing setting during operation to avoid phase distortion between the speakers.**

#### **6. BOUNDARY CONTROLS**

Titan is factory calibrated for optimal performance in full space setups (**F.S.**), away from side and rear walls. The **O.W.** (on wall) boundary control can be engaged when Titan is mounted directly on a wall or ceiling surface to compensate for the build up in low frequency energy.

#### **7. FIRMWARE INPUT**

The USB input labeled “firmware” is for internal use only in calibration and servicing. **This input cannot be used for USB audio.**

## **SECTION 5: TECHNICAL SPECIFICATIONS**

### ***PERFORMANCE***

- Linear Frequency Response: +/- 2db 80hz - 30khz (measured at 30cm cal position)
- Low Frequency Cutoff: -6db at 58hz
- Linear Phase Response: +/- 15° 50hz - 30khz
- Maximum SPL @ 1m: 106db
- THD+N (94db @ cal position): < .5% Power Average 100hz - 30khz
- Coverage Angle: 90° conical

### ***DRIVER COMPLEMENT***

- 146mm (5.5") woofer, 25mm (1") tweeter Custom SEAS/Ex Machina/Composite Sound Metamodal TX™ coaxial

### ***CROSSOVER***

- 2khz, digital 8th order, phase corrected

### ***AMPLIFIER COMPLEMENT***

- Woofer: Hypex NC122MP - 100W RMS
- Tweeter: Hypex NC122MP - 50W RMS, voltage limited

### ***DSP/CONVERSION***

- A/D Chipsets: AKM AK5572EN
- D/A Chipsets: AKM AK4493EQ
- DSP: 5th Gen SHARC+ AD21565

### ***INPUT SENSITIVITY***

- 8vrms to full scale (standard)
- 2vrms to full scale (optional high gain configuration)

### ***MASS & DIMENSIONS***

- 165mm x 165mm x 165mm (6.5" x 6.5" x 6.5")
- 5.5kg (12lbs) per speaker
- Remote AMP/DSP - 6kg (13lbs), 2RU (19" x 11" x 3.5")

## SECTION 6: TROUBLESHOOTING

If your loudspeaker is not reproducing sound, start by checking all power and signal connections. Ensure that the power indicator light on the rear panel is on, and that audio signal is coming into the loudspeaker. If the loudspeaker is still not reproducing sound, power cycle the unit. In rare instances, the DSP firmware can fail to load on initial boot up. This is usually solved by simply turning off the unit, waiting approximately 60 seconds, and powering it back on again.

If none of these solutions solve the problem, please visit:

<https://exmachinasound.com/support>

Fill out the form and submit a support request or contact your dealer and we'll promptly respond.

## **SECTION 7: WARRANTY AND SERVICING**

- Ex Machina Soundworks, LLC warrants new products against defects in materials and manufacturing for a period of 6 years from the date the unit was registered.
- The warranty is tied to the product not to the customer and is transferable.
- During the warranty period, Ex Machina Soundworks will repair or replace a faulty unit (per our discretion).
- Warranty repairs must be carried out by either Ex Machina Soundworks or an authorized repair center, with the exception of driver units, which are field replaceable.
- You must contact your authorized dealer or Ex Machina Soundworks to initiate a warranty claim.
- Ex Machina Soundworks' liability is with its authorized dealers. Contact with the end user may occur, but the warranty claim must be referred to an authorized dealer. Until the product has been inspected, or determined to be in defect by Ex Machina Soundworks' service department, we will admit no liability.
- No warranty will be honored without a valid serial number.
- In the case of a warranty claim, the product or components must be returned to the factory at the customer's expense.
- If the warranty claim is accepted, shipping costs incurred will be reimbursed by Ex Machina Soundworks.