

The Problem

You want to create a Hi-Fi earphone that stands out — not another generic single-dynamic-driver product. You need specific driver configurations (hybrid multi-driver), premium materials, and tuning that targets audiophile standards like the Harman curve. But most factories either cannot handle multi-driver assembly, or require massive MOQs that make specialty products unviable.

DIGCUE's Solution

DIGCUE offers modular Hi-Fi earphone development with flexible component combinations. You choose the shell, driver configuration, cable, and DAC — we engineer, tune, and manufacture it at MOQs that make sense for the audiophile market.

1. The Hi-Fi Earphone Formula

Hi-Fi Earphone = Earphone Shell + Driver Configuration + Cable + DAC

Each element is independently selectable. Mix and match to create your unique product:

Component	Options	Impact
Shell	Resin, metal (aluminum/stainless), 3D-printed, wood, hybrid	Aesthetics, weight, acoustic chamber properties
Driver	Dynamic driver (DD), Balanced Armature (BA), hybrid combinations	Frequency response, detail, soundstage
Cable	OFC copper, silver-plated copper, pure silver, 4-core/8-core, detachable (MMCX/2-pin)	Signal transmission, microphonics, user experience
DAC	Integrated (Type-C with DAC chip), external, or none (3.5mm analog)	Resolution, power output, compatibility

2. Driver Configuration Options

Configuration	Notation	Sound Characteristics	Best For
Single Dynamic Driver	1DD	Full-bodied bass, natural timbre, wide soundstage	Warm, musical sound signatures
Single Balanced Armature	1BA	Precise, detailed mids and highs	Vocal-focused, monitoring

Configuration	Notation	Sound Characteristics	Best For
1 Dynamic + 1 Balanced Armature	1DD + 1BA	DD handles bass, BA handles mids/highs. Balanced hybrid sound.	Entry-level Hi-Fi, versatile listening
1 Dynamic + 2 Balanced Armature	1DD + 2BA	DD for bass, dedicated BAs for mids and highs separately. Greater detail and separation.	Mid-tier Hi-Fi, detail-oriented listeners
1 Dynamic + 3 Balanced Armature	1DD + 3BA	DD for sub-bass/bass, BAs split across low-mid, mid, and high frequencies. Professional-grade resolution.	Premium Hi-Fi, critical listening
1 Dynamic + 4 Balanced Armature	1DD + 4BA	DD for bass foundation, 4 BAs covering full mid-to-treble spectrum with extreme precision. Flagship-level detail.	Flagship Hi-Fi, audiophile market

Crossover Design:

Multi-driver configurations require precision crossover networks to divide frequency bands cleanly between drivers. DIGCUE's acoustic engineers design custom crossover circuits for each configuration, ensuring:

No frequency overlap or cancellation between drivers

Smooth phase alignment across the entire frequency range

Each driver operating in its optimal bandwidth

3. Tuning Philosophy — Harman Curve & Beyond

What is the Harman Curve?

The Harman target response is a scientifically researched frequency response curve that represents what the majority of listeners perceive as "good sound." It features slightly elevated bass, neutral mids, and a gentle treble presence.

DIGCUE's tuning approach:

Tuning Target	Description	Market Fit
Harman Curve	Scientifically validated "crowd-pleaser" — slight bass boost, neutral mids, smooth treble	Mass market Hi-Fi, safe choice for broad appeal

Tuning Target	Description	Market Fit
Flat/Reference	Minimal coloration, studio monitor-like accuracy	Audio professionals, mixing/mastering use
V-shaped	Elevated bass and treble, recessed mids	EDM, pop, bass-heavy genres
Warm	Elevated low-end, smooth treble rolloff	Jazz, acoustic, vocal-focused listening
Bright/Analytical	Elevated upper mids and treble, detailed and forward	Classical, detail-oriented audiophiles
Custom	Client-specified target curve based on brand sound identity	Brands with established audio DNA

Our tuning process for Hi-Fi products:

Client selects target curve or provides reference (competitor product, frequency response graph, or verbal description)

Driver configuration selected to physically support the target (e.g., 1DD+2BA for detailed mids/highs with solid bass)

Acoustic chamber geometry optimized (shell internal volume, porting, damping materials)

Crossover network designed and tuned

Measured on Hi-Res certified instruments — frequency response, impedance, THD, channel matching

Listening evaluation by "Golden Ear" engineers

Final measurement report delivered with production samples

4. Hi-Fi Wired Earphones

Element	Options
Connector	3.5mm single-ended, 4.4mm balanced, 2.5mm balanced
Cable termination	Fixed cable or detachable (MMCX, 2-pin 0.78mm)
Cable material	OFC copper, silver-plated OFC, single-crystal copper, pure silver
Cable	4-core, 8-core, braided, twisted

Element	Options
construction	
DAC integration	None (analog) or Type-C with integrated DAC chip
Shell material	CNC aluminum, stainless steel, resin (transparent/opaque), stabilized wood, 3D-printed resin

Type-C Hi-Fi Wired Earphones (with DAC):

For devices without 3.5mm headphone jacks, we integrate high-performance DAC chips directly into the cable:

DAC Chip	SNR	Features
Bluetrum (AB Chips)	High SNR, low noise floor	Cost-effective, DIGCUE co-tuned for minimal background noise
KT series	High SNR	Good price-performance, stable supply

DIGCUE collaborates directly with Bluetrum to reduce noise floor through firmware-level optimization — achieving premium-tier silence at mid-tier pricing.

Hi-Fi TWS Earphones

Hi-Fi and TWS were once considered incompatible. Not anymore. With advanced Bluetooth codecs and high-quality driver configurations, true wireless Hi-Fi is achievable.

Element	Options
Driver configuration	1DD, 1DD+1BA, 1DD+2BA (practical limit for TWS shell size)
Bluetooth codec	SBC, AAC, aptX, aptX Adaptive, LDAC, LC3/LC3plus
Chipset	Qualcomm QCC series, Airoha, BES (Bestechnic), domestic Hi-Fi chipsets
Shell	Compact resin or metal, must accommodate multi-driver + battery + antenna
Tuning	Harman curve or custom target, integrated with chipset DSP
ANC	Optional — hybrid ANC compatible with multi-driver configurations

Challenges of Hi-Fi TWS (and how DIGCUE solves them):

Challenge	DIGCUE's Solution
Limited shell space for multiple drivers	Precision structural engineering — optimized driver placement and miniaturized crossover
Bluetooth codec limits audio quality	Support for LDAC (990kbps) and aptX Adaptive for near-lossless transmission
Battery life vs. power-hungry drivers	Efficient chipset selection + battery capacity optimization within compact form factor
Crossover complexity in tiny enclosure	Custom miniaturized crossover PCB integrated into PCBA
Consistent channel matching	100% frequency response testing on both L/R channels during production

MOQ Flexibility

Product Type	MOQ (Existing Shell/Platform)	MOQ (Custom Shell/New Tooling)
Hi-Fi wired (1DD)	500 units	3,000 units
Hi-Fi wired (1DD+1BA)	500 units	1,000 units
Hi-Fi wired (1DD+2BA)	500 units	1000 units
Hi-Fi wired (1DD+3BA)	2,00 units	5,00 units
Hi-Fi wired (1DD+4BA)	2,00 units	5,00 units
Hi-Fi TWS (1DD)	500 units	1,000 units
Hi-Fi TWS (1DD+1BA)	500 units	1,000 units
Hi-Fi TWS (1DD+2BA)	2,000 units	1,000 units
Type-C with DAC	1,000 units	3,000 units

MOQs are flexible based on component availability and order commitment. Contact us for specific quotation.

7. Configuration Examples

Example A — Entry-Level Audiophile Wired IEM:

Shell: Transparent resin (show internal drivers)
Drivers: 1DD (10mm) + 1BA (Knowles)
Cable: Silver-plated OFC, 4-core, detachable 2-pin
Connector: 3.5mm single-ended
Tuning: Harman curve target
MOQ: 500 units

Example B — Mid-Tier Hi-Fi Wired IEM:

Shell: CNC aluminum
Drivers: 1DD (10mm) + 3BA (Knowles/Sonion)
Cable: 8-core single-crystal copper, detachable MMCX
Connector: 4.4mm balanced
Tuning: Slightly warm with extended treble detail
MOQ: 1,000 units

Example C — Flagship Hi-Fi Wired IEM:

Shell: Stabilized wood + resin hybrid
Drivers: 1DD (10mm bio-diaphragm) + 4BA (Knowles)
Cable: Pure silver 8-core, detachable 2-pin
Connector: 4.4mm balanced + 3.5mm adapter included
Tuning: Custom target curve (client-specified)
MOQ: 1,000 units

Example D — Hi-Fi TWS:

Shell: Compact metal (aluminum alloy)
Drivers: 1DD (6mm) + 1BA
Bluetooth: 5.3, LDAC support
Chipset: Qualcomm QCC series or Airoha
ANC: Hybrid ANC
Tuning: Harman curve with slight bass emphasis
Battery: 6+ hours playback (LDAC), 30+ hours with case
MOQ: 1,000 units

Example E — Type-C Hi-Fi Earphone with DAC:

Shell: CNC aluminum
Drivers: 1DD (10mm) + 2BA
Cable: Fixed Type-C with integrated ESS Sabre DAC
Tuning: Flat/reference with Zhongke Lanxun noise floor optimization
Compatibility: Android + iPad + laptop (USB Audio Class)
MOQ: 1,000 units

8. Quality Control for Hi-Fi Products

Hi-Fi products demand tighter tolerances than standard earphones:

QC Item	Standard Earphone	Hi-Fi Earphone (DIGCUE)
Channel matching	$\pm 3\text{dB}$	$\pm 1\text{dB}$
Frequency response consistency	$\pm 5\text{dB}$ across units	$\pm 2\text{dB}$ across units
THD (Total Harmonic Distortion)	$< 3\%$	$< 1\%$ (at 1kHz, 94dB SPL)
Impedance matching (L/R)	$\pm 20\%$	$\pm 5\%$
Driver burn-in	Not standard	4–8 hours burn-in before final test
Listening QC	Sample-based	100% listening check on production line

Who This Is For

Audiophile brands building a Hi-Fi IEM product line

Existing earphone brands adding a premium Hi-Fi tier

Kickstarter/Indiegogo creators launching custom IEM projects

Japanese and Korean market sellers where sound quality is the primary differentiator

Audio enthusiasts starting their own brand with limited initial volume

Tell us your target driver configuration, sound signature, and price point — we will provide a complete proposal including BOM, tuning plan, timeline, and pricing within one week.

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