

## FLAGSHIP HOUSING

# The MH-1: A Complete Guide

Everything you need to know about the LLI flagship articulating binocular night vision housing. Construction, features, specifications, optics, tubes, and configuration.

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## What the MH-1 Actually Is

The MH-1 is a housing. That distinction matters. It is not a complete night vision system out of the box. It is the precision-machined shell that holds your image intensifier tubes, optics, power system, and mounting hardware together as a functioning binocular night vision goggle.

Think of it like this: the housing is the chassis. You select the engine (image tubes), the glass (optics), and the power plant (battery configuration) based on your needs, your budget, and your mission. LLI builds the chassis. Our authorized distributors assemble complete systems using the tubes, optics, and accessories you choose.

The MH-1 housing starts at \$1,999. A complete build with image tubes, optics, and accessories ranges from roughly \$5,999 to over \$10,500 depending on configuration.

## Construction and Materials

The MH-1 is CNC machined from aerospace-grade magnesium alloy with titanium alloy components at critical stress points. This is the same class of material used in aircraft structural components, helicopter rotor hubs, and satellite housings. It is not injection-molded polymer. It is not stamped aluminum. It is precision-machined metal.

The housing weighs 5.4 oz (152g) in its lightest configuration. With standard mil-spec optics and image tubes installed, a complete MH-1 system comes in at approximately 19.5 oz. With RPO lightweight optics, that drops to approximately 15.7 oz.

The MH-1 is designed to exceed both the NATO 1.5-meter drop test and IP-68 submersion standards. It uses torx screws throughout instead of the hex screws common on competing housings, which significantly reduces the risk of stripping under field conditions.

## Key Features

### Manual Gain Control

The MH-1 uses a direct 4-pin ECAG plug-in system for manual gain control. This is not a soldered modification. You plug it in. That matters because soldering gain control wires to an image tube voids the tube manufacturer's warranty. The MH-1's plug-in approach preserves your tube warranty while still giving you full manual gain adjustment.

Manual gain control lets you dial the brightness of your tubes up or down depending on ambient light conditions. In high-ambient environments (urban areas, full moon, vehicle headlights), you can reduce gain to prevent washout and tube damage. In extremely dark conditions (heavy overcast, deep canopy, no moon), you can increase gain to maximize image clarity.

### Dual Power IR Illumination

The MH-1 includes two IR illuminators built into the housing. The low-power illuminator handles close-range administrative tasks like map reading, equipment checks, and paperwork. The high-power spot illuminator provides extended-range illumination for target identification, navigation in zero-ambient-light conditions, and area scanning. Both illuminators operate in the infrared spectrum and are invisible to the naked eye.

### Articulating Hinge Design

The MH-1 uses an articulating bridge that allows each optical pod to rotate independently around the hinge axis. This lets you flip one or both pods up and out of your line of sight without removing the entire unit from your helmet mount. The hinge includes adjustable pod tension and IPD (interpupillary distance) stops that let you set your personal eye spacing once and return to it every time.

### Modular Power System

The MH-1 runs on a modular battery architecture. The base configuration ships with a CR123A lithium battery compartment. With the Universal Battery Compartment (UBC), you can switch to AA batteries. A Fischer external battery port is available as a modular accessory, enabling extended runtime via external battery packs. Depending on power configuration, the MH-1 delivers between 25 and 90 hours of continuous operation.

### Split-to-Mono Capability

The MH-1’s Modular Bridge System (MBS) allows you to remove each pod from the binocular bridge and convert them into standalone monoculars using the MH-1 Monocular Adapter. This means one MH-1 binocular can become two independent monoculars, each with their own battery, IR illuminator, and gain control. The pods detach with four screws, attach to the monocular adapter, and function as complete standalone units compatible with standard PVS-14 J-arms.

### Additional Engineering Details

**Pogo Pin Board Design:** Uses pogo pin connections instead of soldered wire connections, making pod removal, tube installation, and field service dramatically easier. **D-Collar Objective Focus Stops:** Eliminates the need for aftermarket close-focus stop rings. **Torx Screws:** Reduces stripping risk compared to hex screws common on competitor housings.

## Specifications

Specification	Value
Type	Articulating Binocular
Material	Aerospace-grade Magnesium and Titanium Alloys
Housing Weight	5.4 oz / 152g (lightest configuration)
System Weight (Std. Optics)	Approx. 19.5 oz
System Weight (RPO Optics)	Approx. 15.7 oz
Power Source	Modular: CR123A (base), AA (via UBC), External Fischer (accessory)
Operation Time	25 to 90 hours
Field of View	40 deg (50 deg with wide-angle optics)
IPD Range	51mm to 78mm

Specification	Value
Diopter Adjustment	-6 to +2
Focus Range	9.8 inches to infinity
Eye Relief	25mm
Environmental Rating	Designed to exceed NATO 1.5m drop and IP-68
Tube Compatibility	MX-10160 and MX-11769
Optics	PVS-14 style eyepiece and objective
Colors	Black, FDE, Ranger Green, Grey
Mounting	Dovetail or Ball Detent
Warranty	Lifetime (transfers, no proof of purchase)

## Optics Options

Optic	FOV	Weight
Standard Mil-Spec PVS-14	40 deg	4.5 oz/set
RPO Ultralight NVD-Next 4.0	40 deg	2.4 oz/set
Photonis Boomslang 50 deg	50 deg	3.5 oz/set
Act in Black 50 deg	50 deg	4.7 oz/set

## Image Tube Options

The MH-1 accepts MX-10160 and MX-11769 format Gen 3 white phosphor image intensifier tubes. Your tube selection is the single biggest factor in image quality and overall system cost.

Manufacturer	FOM Range	Notes
NNVT White Phosphor	1400–1600+ FOM	Budget entry point
Photonis (Matched Sets)	1400–2000 FOM	Multiple phosphor types available
Elbit	1800–2400+ FOM	U.S. military program consistency
L3Harris Filmless WP	2200–2800+ FOM	Highest commercially available performance

## How to Buy

The MH-1 is available through LLI’s authorized distributor network. Complete builds are available from distributors including Custom Night Vision, GPNVGs, Nightfall Optics, Aurora Tactical Group, and MK4 Design. Housing-only purchases are also available. Every MH-1 is built to order with a typical lead time of 2 to 3 weeks.