# Quick Start Guide
# *MicroHAWK MV-20 / MV-30 / MV-40*
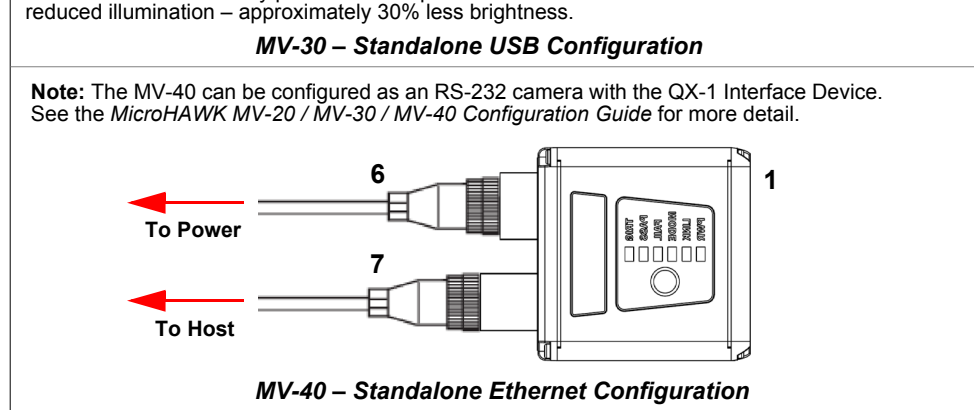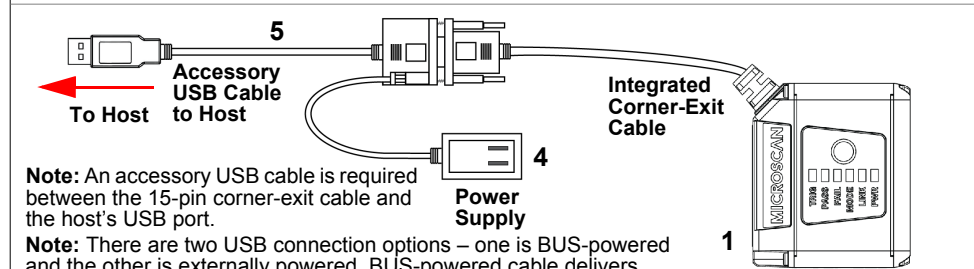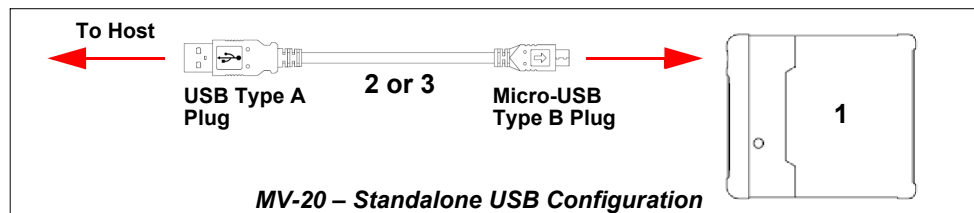
## Step 1 — Check Hardware

**Note:** Full configuration diagrams are available in the *MicroHAWK MV-20 / MV-30 / MV-40 Configuration Guide*.

| Item | Description | Part Number |
|---|---|---|
| 1 | MicroHAWK MV-20, MicroHAWK MV-30, or MicroHAWK MV-40 | 7AXY-YZZZ-LPPP |
| 2 | Cable, USB A to Micro B, 6 ft., MV-20 | 61-9000034-01 |
| 3 | Cable, USB A to Micro B, 3 ft., MV-20 | 61-9000045-01 |
| 4 | Power Supply, 5V | 97-9000006-01 |
| 5 | Cable, DB15 to Ext. Power/USB, MV-30 | 61-9000038-01 |
| 6 | Power Supply, 100-240VAC, +24VDC, M12 12-Pin Socket | 97-000012-01 |
| 7 | Cordset, Host, Ethernet, M12 8-Pin Plug (Screw-On) to RJ45, 1 m. | 61-000160-03 |

## Step 2 — Connect the System

*MV-20 – Standalone USB Configuration*

**Note:** An accessory USB cable is required between the 15-pin corner-exit cable and the host's USB port.

**Note:** There are two USB connection options – one is BUS-powered and the other is externally powered. BUS-powered cable delivers reduced illumination – approximately 30% less brightness.

*MV-30 – Standalone USB Configuration*

**Note:** The MV-40 can be configured as an RS-232 camera with the QX-1 Interface Device. See the *MicroHAWK MV-20 / MV-30 / MV-40 Configuration Guide* for more detail.

*MV-40 – Standalone Ethernet Configuration*

## Step 3 — Mount and Position the Camera

1. Position the camera at a focal distance of one inch or more from a test object.
2. Tip the camera relative to the object to avoid the glare of direct (specular) reflection. The case parting line should be perpendicular to the plane of the symbol by either pitching the symbol or the camera. Avoid excessive skew or pitch. Maximum skew is ±30°; maximum pitch is ±30°.
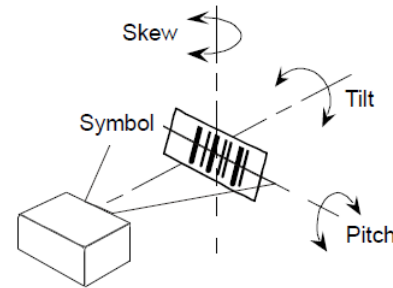
Proper lighting is critical to the success of a machine vision application. Depending on the requirements of your application, you may need to add external lighting from Microscan's NERLITE family of machine vision lighting products.

Consider the following:
- Is the surface of the object flat, slightly bumpy, or very bumpy?
- Is the surface matte or shiny?
- Is the object curved or flat?
- What is the color of the object or area being inspected?
- Is the object moving or stationary?

Machine vision lighting should maximize contrast of the areas or features being inspected while minimizing the contrast of everything else.

## Step 4 — Install AutoVISION

AutoVISION can also be installed from the **Download Center** at **www.microscan.com** and can also be found on the Omron Microscan Tools Drive that is packaged with the camera.

1. Follow the prompts to install AutoVISION from the Tools Drive.
2. Click on the AutoVISION icon to run the program.

### Minimum System Requirements
- Intel Core i3 Processor @ 1.6 GHz
- Internet Explorer 11 or higher / Google Chrome
- 2GB RAM (Windows 7 SP1 / Windows 7 Embedded Standard SP1)
- 3GB hard drive space
- 32-bit color display, 1366 x 768
- 4.0 Windows Experience Index (particularly for graphics)
- 1 USB 2.0 port and 1 Network port

## Step 5 — Connect to the Camera

After you launch AutoVISION, you will see the **Select a device to start editing a job** view.

**Note:** If there is a default job on the camera, AutoVISION will automatically skip the **Connect** step and you will see the **Image** view.

1. Select your camera from the **Select Device** dropdown menu.
2. Click the **Modify** button beneath the camera settings details to change camera settings.
3. Choose whether you want to create a new job, load a job (.avp), or upload a job from the camera.
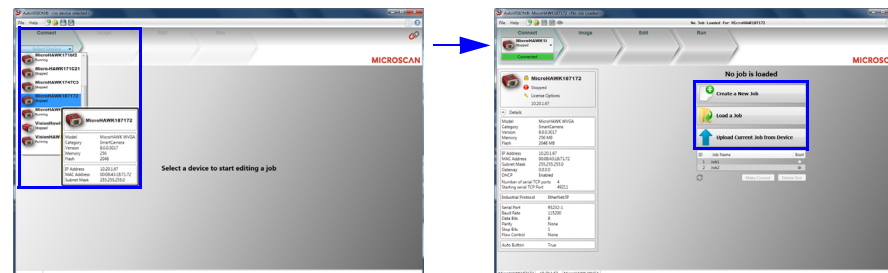
**Note:** If you are using an MV-20 or MV-30 with a USB cable, the driver has already configured your PC address. If you are using an MV-40, you must set the PC to the same IP range as the default IP address. Default IP address: **192.168.188.2**. Set the PC to the same IP range (example: **192.168.188.100**).

## Step 6 — Evaluate a Captured Image and Auto Calibrate

You will see the **Image** view after selecting your device. This view allows you to evaluate your first image capture, providing information such as image size and a histogram. Click the **Auto Calibration** button to set optimal camera parameters automatically. You can also adjust **Exposure**, **Gain**, and **Focus** as needed, and set the desired **Lighting Mode**.

## Step 7 — Create Your First Job with AutoVISION

After you have evaluated a captured image and Auto Calibrated the camera in the **Image** view, you will move to the **Edit** view. This interface allows you to set camera parameters, add machine vision tools to captured images, set tool parameters, and configure I/O inspection outputs.
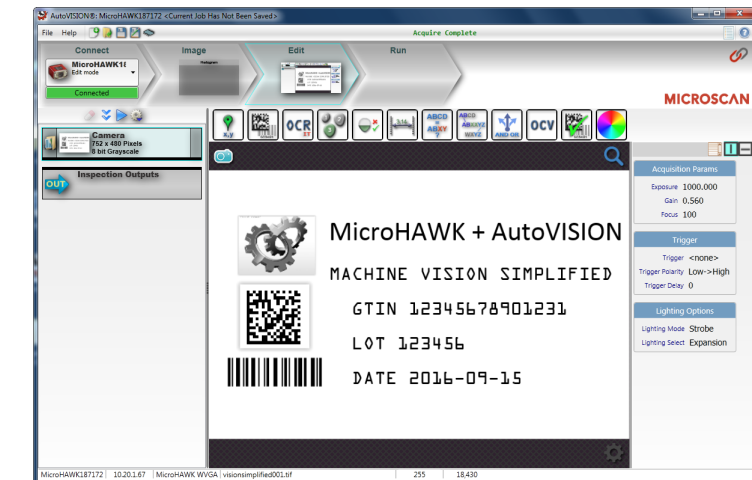
## Step 8 — Explore the Interface

The **Edit** view features a large image area with tool icons above and tool parameters below or to the right depending on user preference. When a tool is selected, its specific parameters appear.

Tools that have been added are shown in the job list to the left of the image area, below **Camera**. Image settings can be controlled using the icons in the corners of the image area.
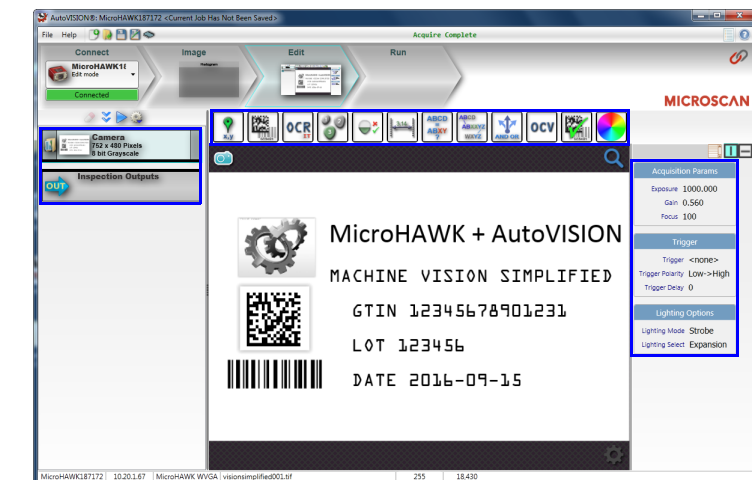
## Step 9 — Set Camera Parameters

1. Click on the **Camera** box to the left of the image area.
2. In the camera parameters below the image area, select the desired type of **Trigger**, **Trigger Polarity**, **Photometry** (Exposure and Gain), **Focus**, and **Lighting**.
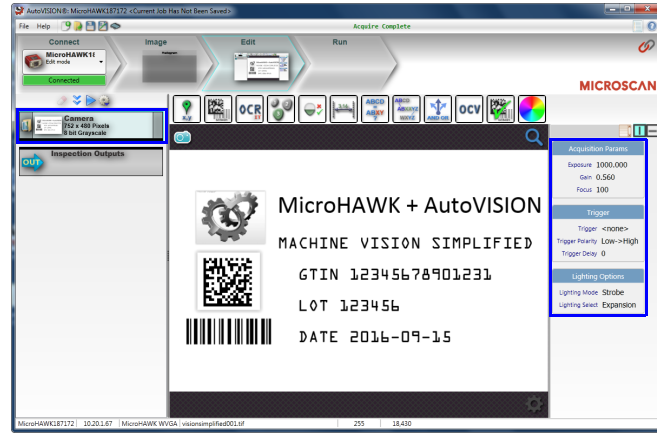


## Step 10 — Add Tools to the Job

1. Click on the **Decode Tool** or drag it onto the image area.
2. Use the anchor points at the corners of the region of interest to form a box around the Data Matrix symbol. Leave plenty of space on each side of the symbol.
3. Now add a second Decode Tool and do the same for the 1D symbol below the Data Matrix symbol.
4. Finally, add an **OCR Tool** and drag the region of interest around the area of the image where "123456" is printed.
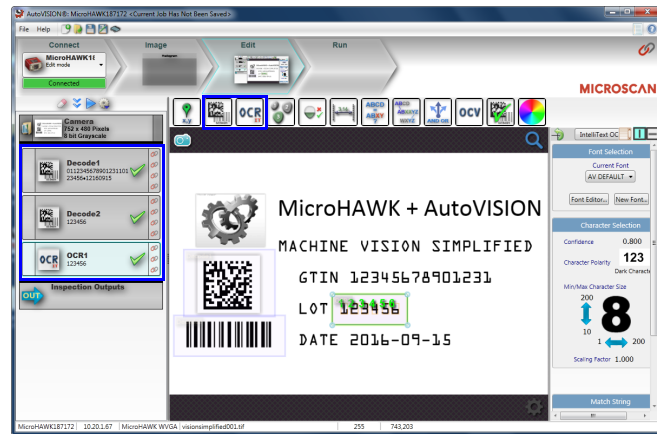


## Step 11 — Try Out the Job

Once you have configured the tools as desired, use the arrow icons in the Job area to try the job you have just created.

**Note:** Most jobs will inspect multiple captured images. If only one image is being inspected, the effect of the arrow icons will not be evident.



*Try Out Job Once*

*Try Out Job in Loop*
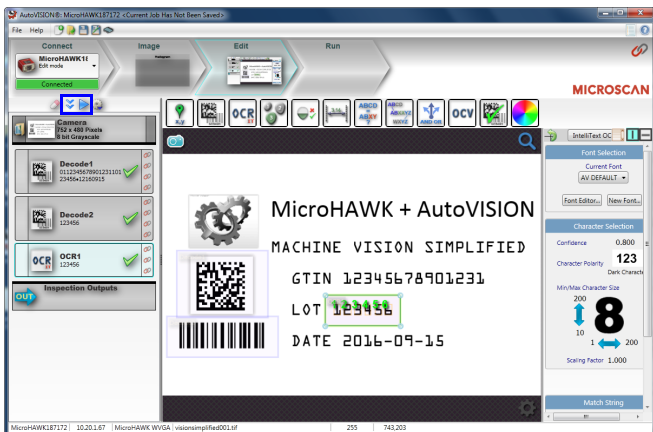
## Step 12 — Run the Job

When all job parameters are set, click on the **Run** step at the top of the interface. The software will download the vision job just created to the camera and will begin the inspection. Inspection results and the list of active tools are shown at the right of the image view. That information can also be moved below the image area by clicking the orientation buttons above the inspection results area.
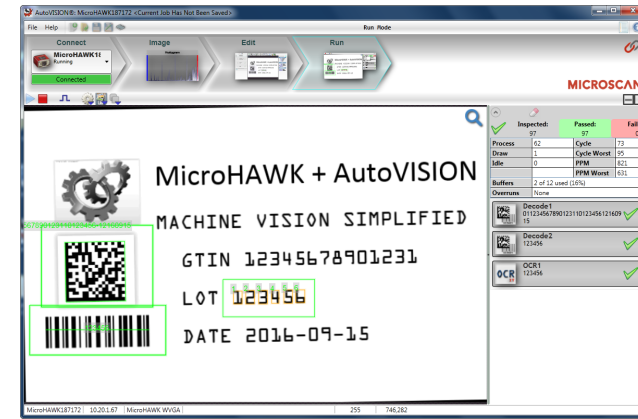


## Test Jobs

**Note:** For descriptions of more advanced functionality, such as setting **Inspection Outputs** or using the **Locate Tool** and **Decode Tool**'s **Dynamic Locate** functionality to track multiple tools from image to image, see the help documentation in AutoVISION software.

### Decode Tool, OCR Tool, Match Strings Tool, String Format Tool



LOT 123456
DATE 05/2024
VISION SIMPLIFIED
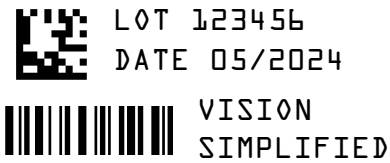
### Measure Tool, Count Tool



**Measure:**
Measure the distance between the jaws of the caliper gauges at left.

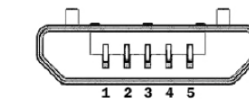**Count:**
Count the circles on the dice shown at right.



## Power Requirements and Pin Assignments

**MicroHAWK MV-20:** 5VDC ± 5%; 350mA at 5VDC (typ.)
**MicroHAWK MV-30:** 5V ± 5%; 600mA at 5VDC (typ.)
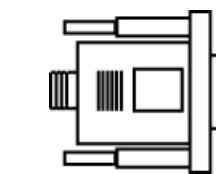**MicroHAWK MV-40:** 4.75V – 30V; 150mA at 24VDC (typ.)
**Important:** See the MicroHAWK MV-20 / MV-30 / MV-40 Smart Camera Guide for full electrical specifications.

### MicroHAWK MV-20 Micro-USB Type B Socket



| Pin | Function |
|---|---|
| 1 | Vbus (5V) |
| 2 | D– |
| 3 | D+ |
| 4 | N/C |
| 5 | Ground |

### MicroHAWK MV-30 High-Density 15-Pin Dsub USB/Serial Socket



| Pin | Function |
|---|---|
| 1 | +5VDC |
| 2 | TX232 |
| 3 | RX232 |
| 4 | GND |
| 5 | D+ |
| 6 | N/C |
| 7 | Output 1+ |
| 8 | Default+ |
| 9 | Trigger+ |
| 10 | D– |
| 11 | Output 3+ |
| 12 | Input+ (New Master+) |
| 13 | Chassis |
| 14 | Output 2+ |
| 15 | Vbus |

**Note:** An accessory cable is required between the MV-30's 15-pin corner-exit cable and the host's USB port.

### MicroHAWK MV-40 M12 Connectors
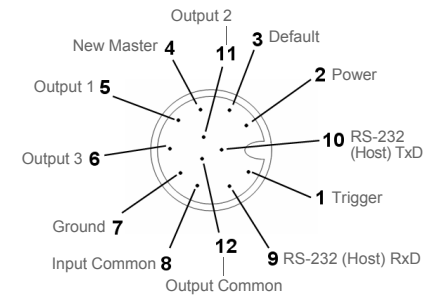


**M12 12-pin Plug**
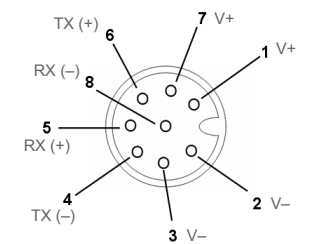
**M12 8-Pin Socket (Ethernet)**

## MicroHAWK MV Part Numbers

MicroHAWK MV part numbers follow the format **7ABX-YZZZ-LPPP**.

**7 = MicroHAWK.**

**Example Part Number: 7412-2000-2104**

**Description:** MicroHAWK MV-40, IP65 Case, 24V, Ethernet, Machine Vision, SXGA, 1.2 Megapixel, Mono, High Density, Autofocus, White Outer LEDs, AutoVISION + Verification + Visionscape.

**(A) Model**
**1:** Engine, No Case, USB
**2:** MV-20, IP40 Case, USB
**3:** MV-30, IP54 Case, 5V, USB
**4:** MV-40, IP65 Case, 24V, Ethernet

**(B) Application Type**
**1:** Machine Vision

**(X) Sensor**
**1:** WVGA 0.3 Megapixel, Mono
**2:** SXGA 1.2 Megapixel, Mono
**3:** QSXGA, 5 Megapixel, Color

| WVGA | 752 x 480, 0.3 MP, Mono | Global | Standard: 10 FPS / High: 60 FPS |
|---|---|---|---|
| SXGA | 1280 x 960, 1.2 MP, Mono | Global | Standard: 10 FPS / High: 42 FPS |
| QSXGA | 2592 x 1944, 5 MP, Color | Rolling | 5 FPS |

**(Y) Optics**
**0:** Custom
**1:** Standard-Density
**2:** High-Density
**3:** Ultra-High-Density
**4:** Long-Range (Autofocus Long Range available for SXGA sensor only.)
**5:** Ultra-High-Density with Polarizer

**(ZZZ) Focus Distance**
**000:** Autofocus
**050:** 50 mm = 1.96 in.
**064:** 64 mm = 2.51 in.
**081:** 81 mm = 3.18 in.
**102:** 102 mm = 4.02 in.
**133:** 133 mm = 5.23 in.
**190:** 190 mm = 7.48 in.
**300:** 300 mm = 11.81 in.
**400:** 400 mm = 15.75 in. – UHD FF

**(L) Outer LED Color**
**0:** N/A (Engine and MV-20)
**1:** Red (Not available with QSXGA sensor.)
**2:** White
**3:** Blue
**4:** IR

**(PPP) Software License Bundles**
**100:** AutoVISION Sensor
**101:** AutoVISION
**102:** AutoVISION + Visionscape
**103:** AutoVISION + Verification
**104:** AutoVISION + Verification + Visionscape

**Notes:**
- **(A) Model:** The MicroHAWK Engine is available for OEM-certified partners only.
- **(L) Outer LED Color:** Outer LEDs provide extra illumination. Base level illumination included with all cameras.
- **Field Upgrades:** Not available for optics or illumination due to factory settings for optical alignment, LED balancing, and sealing for IP enclosure rating. However, the camera's software is field-upgradeable via licenses.