

Using the Dot Peen Verification Kit

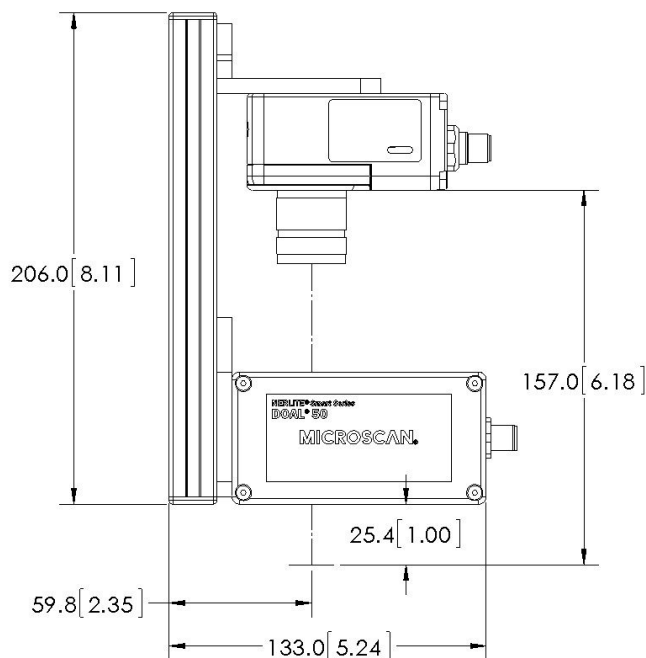


Purpose

This document provides guidance to users of the **Dot Peen Verification Kit**, part number **SLN-000004**. This kit consists of a light, lens, smart camera, and other accessories required to implement a verification system that is compliant with the requirements of **ISO 15415**, **AIM DPM guidelines**, or a **custom verification configuration**.

Kit Contents

| Part Number | Quantity | Description |
|----------------|----------|--|
| NER-011660500G | 1 | NERLITE, Smart Series DOAL, 50mm, Red, M12 Connector |
| GMV-6800-1004G | 1 | Vision HAWK C-Mount Smart Camera, SXGA Mono, AutoVISION+Verification/OCV |
| 98-000265-02 | 1 | AutoVISION Verification Calibration Card |
| 99-000061-01 | 1 | Accessory, Bracket, Smart Series DOAL to Vision HAWK or QX Hawk C-Mount |
| 98-000259-01 | 1 | Lens 25mm F/1.4-16, Front Thread 27mm P 0.5mm, 2/3" C-Mount |
| 080-044700 | 2 | Spacer, M/P, 1mm |
| 83-220126-01 | 1 | User Documentation |



Accessories

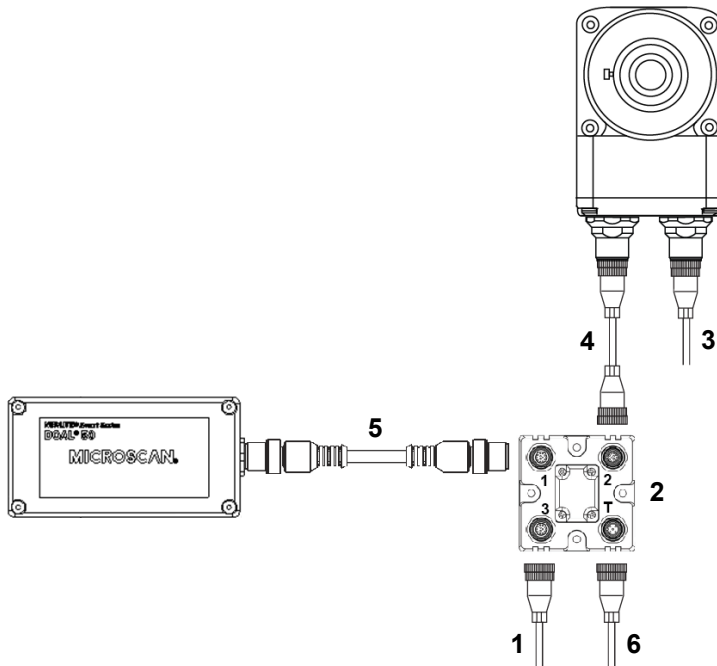
The required accessories are an Ethernet cable for the camera, a power supply, and power cables for the camera and lighting.

The selection of accessories depends on the details of the installation, such as required cable length, availability of suitable power, and whether the installation will employ continuous or strobed lighting.

The minimum set of accessories required to complete a bench-top installation is shown on the next page. In the configuration shown, the Vision HAWK camera and the illuminator share a power supply via a QX-1 Connection Block.

Accessories – Hardware Configuration

| Item | Function | Part Number | Description |
|------|-------------------------------|--------------|--|
| 1 | Camera/Light Power Supply | 97-000012-01 | Power Supply, 100-240VAC, +24 VDC, M12 12-pin Socket (Screw-On) |
| 2 | Connection Block | 98-000103-02 | QX-1 Connection Block |
| 3 | Ethernet Cable | 61-000163-02 | QX Cordset, Host, Ethernet, M12 8-pin Plug (Screw-On) to RJ45, 3 m |
| 4 | Camera Power and Signal Cable | 61-000148-02 | QX Cordset, Common, M12 12-pin, Socket (Screw-On) to M12 12-pin Plug (Screw-On), 3 m |
| 5 | Continuous Lighting Cable or | 61-000204-01 | Cable, Power, Smart Series to QX-1 |
| | Strobe Lighting Cable | 61-000218-01 | Cable, Smart Series to QX-1, Strobe, NPN |
| 6 | Photo Sensor (Optional) | 99-000020-02 | Trigger, M12 4-pin Plug, NPN, Dark On, 2 m |

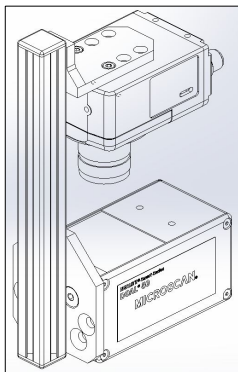


Mounting Positions

The SLN-000004 kit is designed to be mounted perpendicular to the surface of the mark being inspected. The designed standoff distance is 1.00" (25.4 mm) at which distance the field of view with the supplied 25 mm lens and two 1 mm spacers is 1.00" (25.4mm) x 0.75" (19.1mm).

Mounting Options and Hardware

The SLN-000004 kit contains two M4-threaded T-nuts that can be used to mount the DOAL/camera assembly using the slots in the extruded rail supplied with the kit, together with user-supplied M4 machine screws of appropriate length.



Applicability to Verification Standards

This kit supports a camera and lighting configuration that is consistent with the requirements of ISO 15415 (Information technology — Automatic identification and data capture techniques — Bar code print quality test specification — Two-dimensional symbols) and AIM DPM 1-2006 AIM (Direct Part Mark Quality Guidelines). AutoVISION 2.0/Visionscape 6.0 and higher support the verification methodologies defined in these standards for the ECC 200 Data Matrix symbol.

ISO 15415 is best-suited to high-contrast printed marks, and the AIM guidelines are intended for direct part marks.

Lighting Configurations

Both of the applicable standards require that the camera be mounted perpendicular to the marked surface. The ISO 15415 standard requires at least **8 pixels per element**. The AIM standard follows the ISO standard. The minimum 2D symbol element size (cell size) that will provide the required number of pixels per element with the supplied camera and lens is **0.006 inches**.

The ISO 15415 standard indicates basic “reference optical geometries” – meaning lighting positions – and alternate geometries that include **90 degree diffuse on-axis** (such as **DOAL illumination**). When using DOAL illumination, you must enter the 90 degree angle and 628 nm wavelength into AutoVISION’s Symbol Quality Verification Tool and ensure that the angle and wavelength are also included in any resulting verification report.

The AIM standard lists a number of acceptable configurations, including 90 degrees (DOAL).

Marking Method

The Dot Peen Verification Kit should be used for dot peen marks in almost all circumstances. The choice for laser marks depends on the form or the mark. If annealing/ablation has occurred, then the Dot Peen Verification Kit is appropriate if the substrate is dark.

The Dot Peen Verification Kit works best with marks that are on matte diffuse surfaces (ink on matte paper). Conversely, the 1D/2D Label Verification Kit, part number **SLN-0000005**, works best when the mark is on a specular/reflective surface (ink on glossy label stock).

Operation

The DOAL illuminator is designed to be mounted 1.00” (25.0 mm) from the object being inspected. Configuration and use of AutoVISION verification is covered in detail in the **Symbol Quality Verification Tool** section of the *AutoVISION Software User Manual* (“autovisionmanual.pdf”, located in **C:\Microscan\Vscape\Documentation** after AutoVISION installation) and also in AutoVISION Help, which can be accessed from the **File** menu in AutoVISION software.