



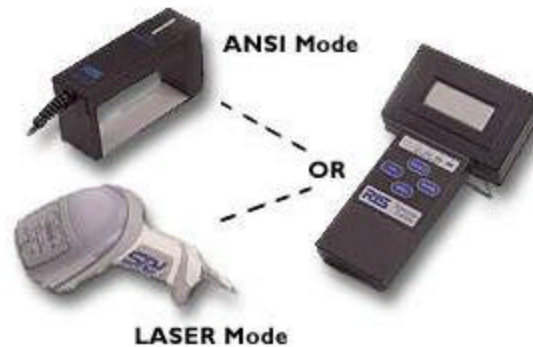
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## INSPECTOR MODEL D4000 Dual Mode Portable Bar Code Verifier DATA SHEET



### The Model D4000 Provides the Two Most Popular Types of Verification; ANSI Method and/or Point-and-Shoot Traditional Method

This unique portable bar code verifier can interface with either the patented RJS Auto-Optic scan head or a laser scanner to provide nine different optic configurations. The scanners are easily installed by the user, which makes the unit quickly adaptable to practically any verification requirement.

#### ANSI Mode Operation

A D4000 incorporating an Auto-Optic scanner is the industry's most flexible ANSI method verifier. Eight optical arrangements are possible via menu selections for four aperture sizes and two wavelengths of light. The optical geometry meets all requirements of the ANSI X3.182 Bar Code Quality Guideline.

The Auto-Optic scanner is designed and manufactured by RJS for the sole purpose of performing ANSI method bar code quality analysis. Repeatability between units is outstanding, making the D4000 an ideal choice as a standardized company-wide ANSI method verifier.

#### Laser Mode Operation

A D4000 incorporating a laser scanner is an extremely easy to use point-and-shoot verifier – basic scanning instructions are placed on the scanner. It requires virtually no user training and analyzes most of the essential traditional verification parameters. It also provides the ANSI method Decodability calculation and percent of decode information.

Popular applications include verification on materials requiring special considerations such

as shiny, curved or uneven surfaces and wet ink. High density codes with X dimensions as narrow as 5 mil (.13 mm) can be also analyzed.

### GENERAL SPECIFICATIONS - Model D4000

#### Modes of Operation

- ANSI Mode; all ANSI method parameters, application compliance, plus traditional analyses
- Laser Mode; traditional parameters (except reflectance), data comparison, percent decode

#### Symbologies

- Code 39; USS, w/mod43, AIAG B-1, B3/4/5/10, LOGMARS, HIBC
- UPC/EAN including 2 and 5 digit supplemental codes
- Code 128; USS, UCC/EAN 128 (see Unique ANSI and Laser Mode Features)
- USS Codabar
- Interleaved 2 of 5; USS, Case Code, w/ Mod 10 Check Digit

#### Features

- Auto-discrimination between symbologies
- Store and Print capability
- Bi-directional scanning
- Multiple scan averaging

#### User Interface

- Simple 4 button: On, Print, Select, Enter
- 4-line LCD
- 5 LED's - indicate average bar deviation (both modes)
- Audible tones indicate pass/fail results, low battery

#### Optional Accessories

- Printer: TP140A
- Battery charger (can be AC power supply w/batteries out of unit)

#### Unique ANSI Mode Features

- Auto-Optic Scanner: Two available models; 3, 5, 10, 20 mil or 3, 6, 10, 20 mil
- Two light wavelengths: 660 and 925 nm
- UCC/EAN 128 Application Identifier (AI) data format check; AI 00 and 01 only

#### Unique Laser Mode Features

- Percent of Decode displayed on lower two LCD lines (Continuous setting only)
- UCC/EAN 128 Application Identifier data format check; **all AI** per current specifications
- Store and print and/or database capability; 20K bytes non-volatile memory programmable in 5K byte segments

#### Product Applications

##### D4000 w/ Laser Optic

- Bar codes on curved surfaces
- Bar codes on easily wrinkled or scratched surfaces
- Wet ink
- Codes that are short in height ( $\leq \frac{1}{4}$ " )

- UCC/EAN codes where AI and data formats must be analyzed
  - Data match
  - May use for analyzing symbols printed on a laser printer but must pay special attention to the ANSI decodability grade
- D4000 w/  
Auto- Optic**
- Portable verifier for screening codes printed on thermal or laser printers
  - Shipping codes direct marked on corrugated material (use 10 and 20 mil aperture depending on code type per UCC spec)
  - Codes with Large (> 25-mil) X dimension
  - Verify using IR light
  - Printing codes with multiple sized X dimension
  - Measure reflectance of material
  - UPC codes on flat surfaces (use 6-mil optic)
- D4000 -  
Both Optics**
- General verification device for ISO 9000 companies
  - Verify using IR light
  - Data match
  - Want common users to have ease of point and shoot but need QA personnel to have full ANSI
  - Measure material reflectance
  - Portable verifier for screening codes printed on thermal or laser printers

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## RJS INSPECTOR MODEL D4000 STATEMENT OF COMPLIANCE

The RJS Inspector Model D4000 performs the ANSI method of verification when an RJS Auto-Optic scan head is installed (ANSI mode). The D4000 performs the traditional method of verification when a laser scanner is installed (laser mode). This document is intended to describe the verifier's standards of compliance in each mode of operation.

**ANSI Mode; Reflectance Compliance - 660 nm wavelength (red) light** (see note 1)

The calibration plaque supplied with the Inspector D4000 is RJS part number 930-08. The plaque's 660 nm (red) reflectance values are traceable to the Applied Image Primary Verification Calibrated Standard per ANSI X3.182 Step Reflectance Chart (see note 2).

**ANSI Mode; Reflectance Compliance - 925 nm wavelength (infra-red) light** (see note 1)

The 925 nm (infra-red) calibration plaque reflectance values are traceable to RJS standards developed between 1975 and 1978 for the initial Autoscan product.

**ANSI Mode; Verification Method Compliance**

The Inspector D4000 gathers data and performs all ANSI method parameter calculations per the X3.182-1990 methodology. **No optical correction algorithms are incorporated**

**in this system. One RJS proprietary calculation correction algorithm is incorporated to provide a more accurate and consistent Decodability calculation for manual scanning. This algorithm produces maximum accuracy for Decodability when a symbol is scanned in both directions during a multiple scan analysis.**

The optical configuration meets all aspects of the X3.182-1990 requirements.

The four round apertures used for the ANSI verification method are each physically inspected and measured to be within +/- .0004 inch of their intended diameter sizes when in the final optical configuration.

Final system test is performed by scanning a set of test symbols that are traceable to Applied Image U.P.C. Primary Verification Standard (per ANSI X3.182) calibrated at 660 nm and 6 mil aperture (or 5 mil depending on the scanner model being tested.) All calculated parameters are confirmed to be within +/- 4 % of all target parameters marked on the symbols (see notes 1 and 2).

### **Laser Mode Using CR1 Scanner**

#### **Average Bar Deviation Calculation Compliance**

Digital data received by the scanner (see note 1) is used to calculate Average Bar Deviation and the ANSI method Decodability calculation. This is the basis for all bar code element measurements provided by this verifier model.

The D4000 laser mode average bar deviation analysis is traceable to the average bar deviation calculated by an RJS Inspector 4000 ANSI method verifier. This makes the laser mode traceable to the ANSI method of element width calculations (which are also used in the Inspector 4000 to calculate the ANSI method Decodability parameter.)

A reference symbol is included on the bar code test sheet supplied with each Inspector Model D4000 with laser scanner. The reference is created by scanning the symbol with a calibrated Inspector 4000 and then marking the symbol with the location of the "A" in the Inspector 4000 average bar deviation graph display.

#### **ANSI Method Decodability Calculation Compliance**

The ANSI method Decodability calculation is traceable to the Calibrated Conformance Standard Test Card for EAN/UPC Symbol Verifiers.

Final system test includes two steps for ensuring accuracy:

1. Scanning a reference symbol and ensuring the placement of the "A" is calculated to be within +/- one (1) location marked on the reference. This equates to approximately +/- 21% accuracy between all Laser Inspectors for average bar code deviation calculations.
2. Scanning the Decodability (BAR) symbol on the Calibrated Conformance Standard Test Card at the proper distance and angle and ensuring the Decodability calculation is within +/- 4 % of the NIST traceable value marked on the card.

#### Notes:

1. The Inspector Model D4000 can be set up to be calibrated to practically any reflectance standard in ANSI mode. High and low calibration reflectance target values for both the red and infra-red light sources are user programmable via menus.
2. Applied Image certified Calibration Standards are manufactured to Applied Image, Inc. and Uniform Code Council,

Inc. specifications, using ANSI X3.182-1990 methodology, and are calibrated using standards traceable to the National Institute of Standards and Technology (N.I.S.T.)

3. Laser mode does not require any calibration or adjustments. The laser scanner is screened for digitizer accuracy to be within acceptable tolerances for bar width deviation measurements and ANSI method Decodability calculations.



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