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## Explanation of the changes between RJS D4000 Firmware version A.03/A.05 and firmware version A.06/A.07

The D4000 firmware A.06/A.07 has a number of functional changes from the previous A.03/A.05 firmware versions:

- Updated Terminology - The firmware will update the terminology used in both the symbology and the sub-symbology names as listed on the Setup menu options and the printed reports
- Addition of the Decodability Percentage and Grade to the Pass/Fail Analysis Screen (Displayed after a scan is captured)
- Full GS1-128 Application Identifier Support - Current D4000 units have a limit of 32 characters, and are missing some newer Application Identifiers (AIs). The new A.06/A.07 allows for the full GS1 limit of 48 data characters to be inspected and will not impose a limit on the maximum number of AIs in the bar code.
- Improvements for Interleave 2 of 5 and Code 39 - ratio testing will be upgraded, to report ratio warnings in addition to ratio failures

### Setup Menu Options (Applies to D4000 Auto Optic and Laser)

Setting	Version	
	A.03/A.05	A.06/A.07
Decode 3of9 as	USS 3of9	Code 3of9
Decode I2of5 as	Case Code	ITF14 Case Code
Decode I2of5 as	USS 2of5	Std I2of5
Decode C128 as	N/A	Std 128
Decode C128 as	N/A	GS1-128
Database Storage	0-20kb 0-20kb	N/A (all Database)

### Pass/Fail Analysis Screen (Applies to D4000 Laser ONLY)

	Version	
	A.03/A.05	A.06/A.07
Description of screen information:	<i>Displays Bar Tolerance Chart</i>	<i>Displays ISO/ANSI Decodability results</i>
Screen Examples:	<div>*1234ABCD* Code 3of9 -100% Tol. +100% -----RRARR+++</div>	<div>*1234ABCD* Code 3of9 D/bility % .64 D/bility Grade A</div>

## GS1-128 Testing (Applies to D4000 Laser with version A.06/A.07 ONLY)

### Testing Parameters

The D4000 Laser will inspect all GS1 Application Identifier (AI) content and length, this includes:

- FNC1 (Variable length AIs must start with a FNC1 character)
- Multiple AI support (unlimited number of AIs in a bar code)
- Date encodation (AIs with dates will be tested for proper formatting)
- GTIN prefixes (Some AIs require a prefix digit in the GTIN),
- Linked AIs (Some AIs require another AI to be encoded in the bar code)
- Numeric requirements (Some AIs are numeric only)
- Testing to ensure 48 data characters (excludes sub-set changes) are not exceeded

### FNC1 Testing

When a Code 128 symbol is decoded **AND** the first character after the Start character is **FNC1** then the symbol must follow the GS1-128 format and the verifier must have the following Code 128 sub-specifications setting:

Decode C128 as  
GS1-128

When a Code 128 symbol is decoded with the Code 128 sub-specifications setting of **Std 128** but the first character after the Start character **is** a **FNC1** then the following error will be displayed:

Std 128  
Format Warning

When a Code 128 symbol is decoded with the Code 128 sub-specifications setting of **GS1-128** and the first character after the Start character **is not** a **FNC1** then the following error will be displayed:

GS1-128  
Format Warning

### Data Content Testing

When Code 128 sub-specifications setting is GS1-128 and a GS1-128 bar code is inspected an additional screen will be inserted into the Data Analysis screens:

GS1-128  
Acceptable  
AI ( 01)

Example of a bad check digit in the GTIN:

GS1-128  
Bad Mod. Check  
AI ( 01)

## Data Content Testing (continued)

Example of an alpha-character in a numeric only AI:

GS1-128  
Expected Numeric  
AI (3931)

**Note:**

If a bar code has multiple errors **only** the first error will be displayed

Example of a bar code with more than 48 data characters:

GS1-128  
Exceeds 48 Chars  
AI (250)

**Note:**

If a bar code data length is exceeded, the AI that exceeded the 48 character limit will be displayed

Example of an invalid date encoded in an AI:

GS1-128  
Out-Of-Range  
AI (17)

**Note:**

For Month and Year only encodes the Day may be encoded as "00"