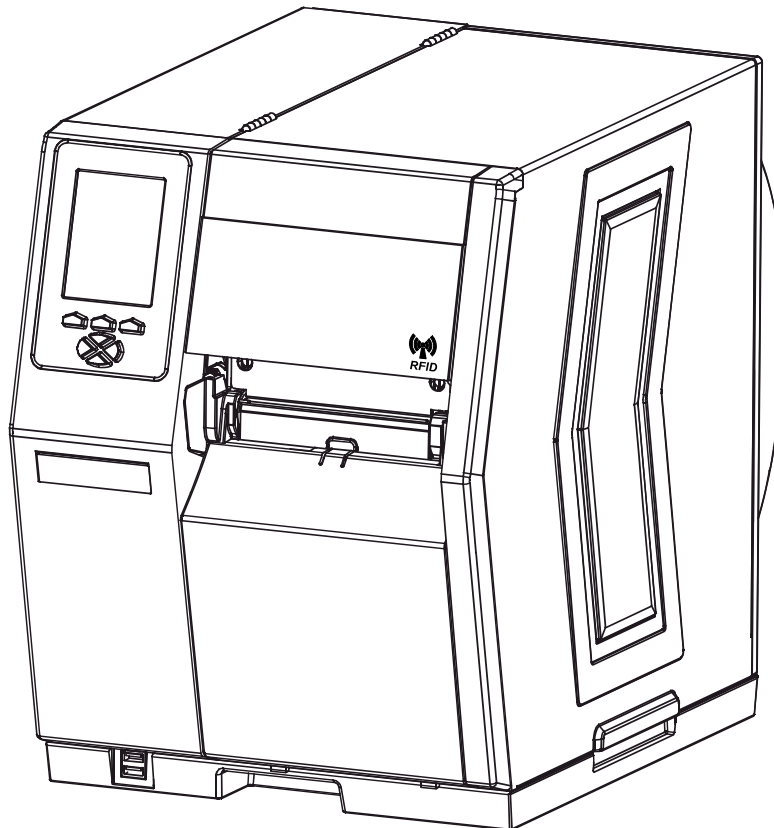




RFID

Quick Start Guide



Datamax Corporate Headquarters
4501 Parkway Commerce Boulevard
Orlando, Florida USA 32808
Phone (407) 578-8007
Fax (407) 578-8377
customercare@datamaxcorp.com

Datamax International
Phone +44 1279 772200
rbyrne@datamaxcorp.com

Datamax Latin America
Phone (407) 523-5520
tdelgado@datamaxcorp.com

Datamax Asia Pacific
Phone +65-6542-2611
datamax@pacific.net.sg

Datamax China
Phone +86-21-64952882
datamax_cn@china.com

This guide presents a systematic overview of important media requirements, setup options, and modes of use for Datamax H-Class RFID-equipped printers.



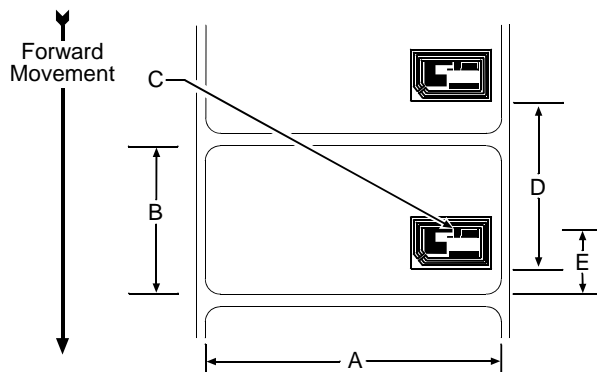
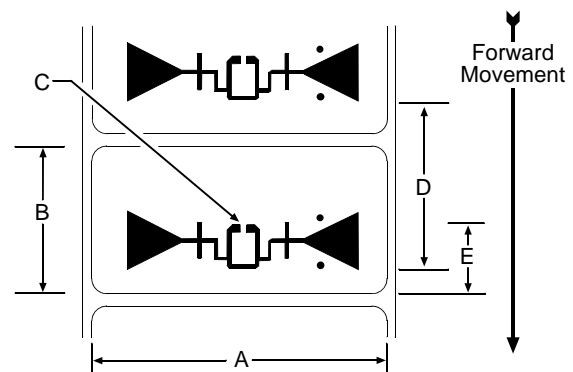
- This device complies with FCC Radio Frequency exposure limits for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. If 20cm distance cannot be maintained, end users are to be 20cm from printer extremity.
- Any changes or modifications to this RFID module not expressly approved by Datamax Corporation will void the user's authority to operate the equipment.
- Operation is subject to the following conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

Note: *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.*



Step 1: Know the RFID Media

Depending upon the type of encoder in your printer, ensure that your RFID media meets the following specifications:

Smart Label and Tag Requirements ^[1]			
HF Layout ^[2]		UHF Layout	
			
Definitions ^[3]			
Designator	Description	Dimension (inches)	Dimension (millimeters)
A	Label Width	4.00	101.6
B	Label Lengths	2.00, 4.00, & 6.00	50.8, 101.6, & 152.4
C	Chip Location Tolerance	± 0.05	± 1.3
D	Label Pitch (minimum)	2.25	57.2
E	Chip Inlay Location	1.10	27.9

^[1] Reference the *Operator's Manual* for additional standard media requirements.

^[2] The HF RFID Chip Inlay Location can be left, right, or center justified.

^[3] These definitions are referenced while looking down onto the labeling side of the media, and from the leading edge of the label (or tag) as it moves forward through the printer.

Note: If you have questions regarding media selection, contact a Datamax Media Representative at (407) 523-5650.



Step 2: Know the Printer

For easy setup and configuration, most RFID settings can be modified via the printer's front panel. Depending upon your RFID hardware option, the factory default settings are as follows:

- **HF RFID Default Settings** (RFID MODE = HF):

RFID POSITION = 1.10

HF SETTINGS:

TAG TYPE = ISO 15693

RETRY ATTEMPTS = 3

- **UHF RFID Default Settings** (RFID MODE = UHF):

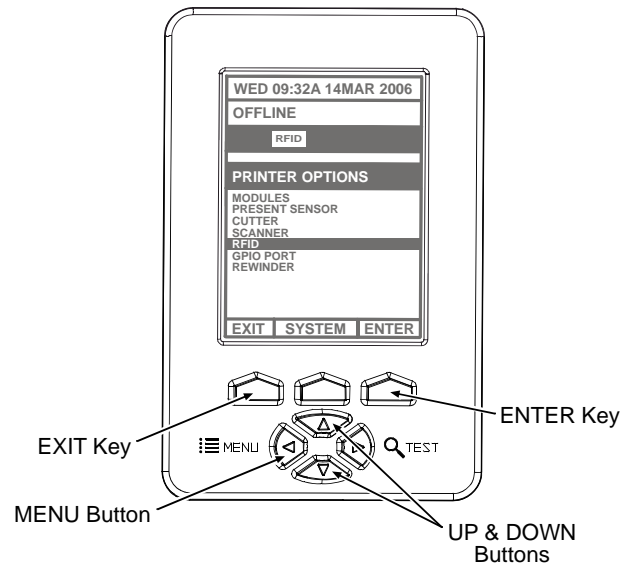
RFID POSITION = 1.10

UHF SETTINGS:

TAG TYPE = GEN 2

TAG DATA SIZE = 96-BIT

RETRY ATTEMPTS = 3



To change a factory default setting using the front panel, begin by accessing the **ADVANCED MENU**:

- 1) Press the **MENU BUTTON**.
- 2) Using the **UP** or the **DOWN BUTTON**, scroll to **SYSTEM SETTINGS** then press the **ENTER KEY**.
- 3) Using the **UP** or the **DOWN BUTTON**, scroll to **MENU MODE** then press the **ENTER KEY**.
- 4) Using the **UP** or the **DOWN BUTTON**, scroll to **ADVANCED MENU** then press the **ENTER KEY**.

Next, select the factory default setting to be modified (for example, RETRY ATTEMPTS):

- 1) Press the **MENU BUTTON**.
- 2) Using the **UP** or the **DOWN BUTTON**, scroll to **PRINTER OPTIONS** then press the **ENTER KEY**.
- 3) Using the **UP** or the **DOWN BUTTON**, scroll to **RFID** then press the **ENTER KEY**.
- 4) Using the **UP** or the **DOWN BUTTON**, scroll to **RETRY ATTEMPTS** then press the **ENTER KEY**.
- 5) Using the **UP** or the **DOWN BUTTON**, enter the desired number of retries then press the **ENTER KEY**.
- 6) Press the **EXIT KEY** and, at the **SAVE CHANGES** prompt, answer **YES** to complete the setup.

- Notes:**
- (1) If the display indicates NOT INSTALLED after selecting RFID, then the device is not equipped or not communicating with the printer. In this case, proceed to the MODE setting and ensure that the correct RFID device has been selected.
 - (2) For User Interface details, see the *Operator's Manual*.
 - (3) To restore factory defaults, select SET DEFAULTS in the RFID options menu.

As a final note on default settings, encoded RFID data can be exported to a host device (with proper cabling) by enabling OPTION FEEDBACK. The data is contained in the format <A;B;C;D;E;F>[CR] where:

A -	Is the device type: R = RFID; and, S = Linear Scanner.
B -	Is the resulting status: C = entire label complete; F = faulted (failed) label; and, U = unknown.
C -	Is the number of expected reads for bar codes or tags, given in two characters.
D -	Is the number of good reads for bar codes or tags, given in two characters.
E -	Is the printer's internal Job and Sub Job Identifier, given in four characters each.
F -	Is the data that was read, delimited with semicolons (;) on multiple reads.

To enable **OPTION FEEDBACK**, proceed as follows:

- 1) Press the **MENU BUTTON**.
- 2) Using the **UP** or the **DOWN BUTTON**, scroll to **COMMUNICATIONS** then press the **ENTER KEY**.
- 3) Using the **UP** or the **DOWN BUTTON**, scroll to **HOST SETTINGS** then press the **ENTER KEY**.
- 4) Using the **UP** or the **DOWN BUTTON**, scroll to **OPTION FEEDBACK** then press the **ENTER KEY**.
- 5) Using the **UP** or the **DOWN BUTTON**, enter the desired output format (**RFID HEX** or **RFID ASCII**) then press the **ENTER KEY**.
- 6) Press the **EXIT KEY** and, at the **SAVE CHANGES** prompt, answer **YES** to complete the setup.



Step 3: Calibrate the RFID Tag

To establish the critical tag to transducer distance setting and nominal power requirements, the printer features two different RFID tag calibration methods, Quick and Standard. As shown below, while the amount of operator interaction differs, both calibration methods accomplish the same result. Before calibrating for the RFID tag, ensure the following:

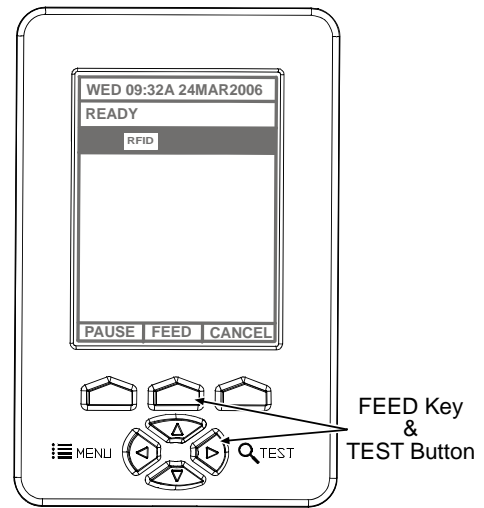
- 1) That RFID media has been loaded;
- 2) That the printer's media sensor has been calibrated for the RFID media; and,
- 3) That the RFID option has been enabled in the printer's option menu.

(Consult the *Operator's Manual* for details on these procedures and settings.)

Proceed with the RFID Tag calibration, choose your preferred method and execute the steps required:

- **Quick RFID Calibration –**

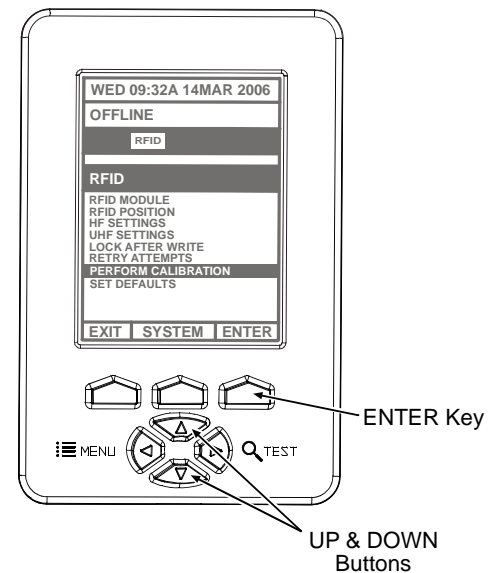
With the printer at READY, simultaneously press both the **FEED Key** and the **TEST Button**;



– OR –

- **Standard RFID Calibration –**

- 1) From the **Advanced Menu**, press the **MENU BUTTON**.
- 2) Using the **UP** or the **DOWN BUTTON**, scroll to **PRINTER OPTIONS** and press the **ENTER KEY**.
- 3) Scroll to **RFID** and press the **ENTER KEY**.
- 4) Scroll to **PERFORM CALIBRATION** and press the **ENTER KEY**.



Using either method, you will be prompted to **PERFORM CALIBRATION?** Answering **YES** at the prompt will initiate the process, while **NO** will terminate it. If yes, the **CALIBRATING RFID** message will appear and the printer will feed the media then begin scanning for the RFID tag location. Once the location is established, power calibration begins. Wait briefly while both processes finish.

Upon completion, the media will be retracted to the TOF position, the calibrated position and power results (along with a brief **SUCCESS** or **FAILURE** message) will be displayed, and the printer's database will be updated with the new calibration parameters.

☑ Note: If using the Standard RFID Calibration method, an additional pop-up window allows detailed calibration results to be viewed and printed (see sample below).

This is the optimum power level and tag position that was established and set in the printer during the RFID Calibration process.

RFID TAG REPORT			
WED 09:52AM 12 APR2006			
POWER LEVEL			
0dB			
RFID POSITION			
1.41in.			
POSITION	OUTCOME	POWER	OUTCOME
1.10in.			
1.14in.	RW	-4dB	RW
1.18in.	RW	-3dB	RW
1.22in.	RW	-2dB	RW
1.26in.	RW	-1dB	RW
1.30in.	RW	0dB	RW
1.33in.	RW	1dB	RW
1.37in.	RW	2dB	RW
1.41in.	RW	3dB	RW
1.45in.	RW	4dB	RW
1.49in.	RW		
1.53in.	RW		
1.57in.	RW		
1.61in.	RW		
1.65in.	RW		
1.69in.	RW		
1.73in.	RW		
1.77in.			
1.81in.	R		
1.85in.			

These are tested tag positions and outcomes, where:
RW = Read/Write;
R = Read; and
blank = unreadable.

After establishing the tag position, these are the tested power levels and outcomes, where:
RW = Read/Write;
R = Read; and
blank = unreadable.



Step 4: RFID Programming Modes

The printer features two different operational modes for RFID tag programming:

- **Direct Mode** allows the user (Host) to control the reading and writing of the RFID tag directly. Containing both a generic read/write interface and a high-level tag UHF-specific interface, each RFID tag is individually processed with status and data responses.
- **Label Formatting Mode** utilizes the current printer configuration to process all the reads, write, and exception processing for each tag printed. (For exception processing and fault handling details, see the *Operator's Manual*.) The specification for the RFID operation is contained in the data fields of a DPL label format, instructing the printer to write data, read data, and update selective fields prior to printing the label. This mode supports automatic increment and decrement commands for numeric, alphanumeric, or hexadecimal.

☑ **Notes:** (1) Both programming modes will auto-position the label to the RFID tag location.

(2) Reference the *Class Series Programmer's Manual* for detailed RFID programming information.