

^RZ

Set RFID Tag Password and Lock Tag



Important • This command is not supported by all printers or firmware. See *Printer and Firmware Compatibility* later in this document for the list of printers and firmware with which you can use this command.

Description Use this command to define a password for a tag during writing.

With Gen 2 tags, you can lock a tag’s memory bank with an access password or define a kill password that can be used to permanently disable the tag. If you do not set access or kill passwords for a tag, the tag ignores any read or write commands that try to use these functions.





Note • The printer can set a kill password, but the printer cannot kill a tag.

Format ^RZp,m,l

The following table identifies the parameters for this format.

Parameters	Details
p = password	<p>Sets a password.</p> <p>For tag types other than Gen 2: The password is 8 bits. The memory bank and lock style parameters are ignored. The password must be 2 hexadecimal characters long. <i>Accepted Values:</i> 00 to FF (hexadecimal) <i>Default Value:</i> 00</p> <p>For Gen 2 tag type only: Gen 2 tags use a 32-bit password and specify the memory bank and lock style. The password must be 8 hexadecimal characters long. Use <i>^RF command</i> to read the passwords. <i>Accepted Values:</i> 00000000 to FFFFFFFF (hexadecimal) <i>Default Value:</i> none</p>

Parameters	Details
m = memory bank	<p>Specifies the memory bank to perform the lock style. If κ is specified, the p parameter is written to the kill password. Otherwise, the p parameter is written to the access password.</p> <p> Note • This parameter applies to Gen 2 tags only.</p> <p><i>Accepted Values:</i></p> <ul style="list-style-type: none"> κ = kill password A = access password E = EPC T = tag identifier (TID) U = user <p><i>Default Value:</i> none</p>
l = lock style	<p>Specifies the lock style to perform on the memory bank. A non-zero password must be specified to lock or permanently lock a memory bank.</p> <p> Note • This parameter applies to Gen 2 tags only.</p> <p><i>Accepted Values:</i></p> <ul style="list-style-type: none"> U = unlocked L = locked O = permanently unlocked (open) P = permanently locked (protected) W = write value (used only for the kill password memory bank) <p><i>Default Value:</i> none</p>



Example 1 • On a tag that is not Gen 2, this example encodes 5A as the tag password.

```
^XA
^RZ5A^FS
^XZ
```



Example 2 • On a Gen 2 tag, this example encodes EPC data 112233445566778899001122 to the tag in Hex format, write protects the tag's EPC data with password 1234ABCD, and leaves the tag's access password unlocked.

```
^XA
^RFW,H^FD112233445566778899001122^FS
^RZ1234ABCD,E,L^FS
^XZ
```



Example 3 • On a Gen 2 tag, this example encodes EPC data 112233445566778899001122 to the tag in Hex format, write protects the tag's EPC data with password 1234ABCD, and makes the tag's access password unreadable.

```
^XA
^RFW,H^FD112233445566778899001122^FS
^RZ1234ABCD,E,L^FS
^RZ1234ABCD,A,L^FS
^XZ
```

The following code unprotects EPC data 112233445566778899001122 using the password 1234ABCD, encodes EPC data *newdata* to the tag in ASCII format, and then write protects the tag's new EPC data. The access password and its lock state are not changed, so the access password remains unreadable.

```
^XA
^RZ1234ABCD,E,U^FS
^RFW,A^FDnewdata^FS
^RZ1234ABCD,E,L^FS
^XZ
```



Example 4 • On a Gen 2 tag, this example unlocks the locked access password from the previous example.

```
^XA
^RZ1234ABCD,A,U^FS
^XZ
```

Printer and Firmware Compatibility

Table 8 shows which RFID ZPL commands you can use with different printers and firmware versions.

Table 8 • Supported Commands Based on Printer and Firmware

Command	Function	UHF Printers					HF Printers									
		R110Xi and R170Xi	RZ400 and RZ600	R110PAX4	R4Mplus						RP4T	R110X/HF	RZ844-Z			
Firmware																
<i>^HL</i> or <i>~HL</i> on page 84	Return RFID Data Log to Host	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>^HR</i> on page 85	Calibrate RFID Transponder Position	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>^HV</i> on page 88	Host Verification	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>^RA</i> on page 91	Read AFI or DSFID Byte	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>^RB</i> on page 93	Define EPC Data Structure	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>^RE</i> on page 95	Enable/Disable E.A.S. Bit	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>^RF</i> on page 96	Read or Write RFID Format	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>^RI</i> on page 100	Get RFID Tag ID	*	*	(R60.13.0.13ZD or later)	*	(R62.13.0.13ZC or later)	*	(R63.13.0.11Z or later)	*	*	*	*	*	*	*	*
<i>^RM</i> on page 101	Enable RFID Motion	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>^RN</i> on page 102	Detect Multiple RFID Tags in Encoding Field	*	*	(R60.13.0.3 or later)	*	*	*	*	*	*	*	*	*	*	*	*
<i>~RO</i> on page 103	Reset Advanced Counters	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

* = Supported
 — = Not supported
 a. Not ^FH capable. Also, parameters t and a do not apply. b. For parameter c, the only accepted value is N for No Action.
 c. Use the ^RF, ^RM, and ^RR commands rather than the ^RT command. d. Use the ^RF, ^RM, ^RR, and ^RV commands rather than the ^WT command.

^RF

Read or Write RFID Format



Important • This command is not supported by all printers or firmware. See *Printer and Firmware Compatibility* on page 82 for the list of printers and firmware with which you can use this command.


Description Use this command to read or write to (encode) an RFID tag. When using this command to read a tag, you may use a field variable to print the tag data on the label or to return the data to the host. See *Create and Send an RFID Label Format* on page 30 for examples that use a field variable.

Format ^RF \circ, f, b, n, m

This table identifies the parameters for this format.

Parameters	Details
\circ = operation	<p>Specifies the action to be performed.</p> <p><i>Accepted Values:</i></p> <ul style="list-style-type: none"> W = write to (encode) the tag L = write with LOCK (if supported by tag type; Gen 2 tag type does not use this locking function) R = read the tag P = read password (Gen 2 tag type only) <p><i>Default Value:</i> W</p>
f = format	<p><i>Accepted Values:</i></p> <ul style="list-style-type: none"> A = ASCII H = Hexadecimal E = EPC (ensure proper setup with the ^RB command) <p><i>Default Value:</i> H</p>

Parameters	Details
<p>b = starting block number</p>	<p>For tag types other Gen 2: Specifies the starting block number. <i>Accepted Values:</i> 0 to <i>n</i>, where <i>n</i> is the maximum number of blocks for the tag. <i>Default Value:</i> 0</p> <p>For Gen 2 tag type only: What you specify for this parameter depends on what you entered for the operation parameter.</p> <ul style="list-style-type: none"> When W, L, or R are specified for the operation parameter, this parameter specifies a 16-bit word block number. <i>Accepted Values:</i> 0 to <i>n</i>, where <i>n</i> is the maximum number of blocks for the bank specified in the memory bank parameter <i>Default Value:</i> 0 When P is specified for the operation parameter, this parameter specifies which password to read. <i>Accepted Values:</i> K = kill password A = access password <i>Default Value:</i> K
<p>n = number of bytes to read or write</p>	<p>Specifies the number of bytes to read or write.</p> <p>For high-frequency (HF) printers: <i>Accepted Values:</i> 1 to <i>n</i>, where <i>n</i> is the maximum number of bytes for the tag. <i>Default Value:</i> 1</p> <p>For Gen 2 tag type only: When E is specified for the memory bank parameter, this value is not required. <i>Accepted Values:</i> 1 to <i>n</i>, where <i>n</i> is the maximum number of bytes for the tag. <i>Default Value:</i> 1</p> <p>For all other printers and tag types: This parameter applies only when the starting block number is 1. <i>Accepted Values:</i> 1 to <i>n</i>, where <i>n</i> is the maximum number of bytes for the tag. For UCODE EPC 1.19, <i>n</i> is 32. <i>Default Value:</i> 1</p>

Parameters	Details
m = memory bank	 <p>Note • This parameter applies to Gen 2 tags only.</p> <p>Specifies the Gen 2 memory bank. See <i>Gen 2 Memory Map</i> on page 46 for more information about Gen 2 memory.</p> <p><i>Accepted Values:</i></p> <ul style="list-style-type: none"> E = EPC 96-bit (command automatically performs operation on Gen 2 bit address 20_h and accesses 12 bytes of the EPC memory bank) 0 = Reserved 1 = EPC 2 = TID (Tag ID) 3 = User <p><i>Default Value:</i> E</p>

➔ **Example 1** • This example encodes 96-bit data in ASCII format.

```
^XA
^RS4
^RFw,a^FD00 my data^FS
^XZ
```

➔ **Example 2** • This example encodes 64-bit data in hexadecimal format.

```
^XA
^RS3
^RFw,H^FD1122334455667788^FS
^XZ
```

➔ **Example 3** • This example encodes 96-bit EPC data, as specified by the ^RB command.

```
^XA
^RB96,8,3,3,20,24,38
^RFw,e^FD16.3.5.78742.146165.1234567891^FS
^XZ
```

➔ **Example 4** • This example encodes 4 bytes of hexadecimal formatted data, starting in block 3 of Gen 2 EPC bank 1.

```
^XA
^RS8
^RFw,H,3,4,1^FD11112222^FS
^XZ
```




Example 5 • This example reads the extended Gen 2 tag ID (TID), which is not read by the ^RI command, and returns the results to the host computer. The results are labeled with the header “8-byte Tag ID Data.”

```
^XA
^RS8
^RFR,H,0,8,2^FN1^FS^HV1,,8-byte Tag ID Data:^FS
^XZ
```