The Xerafy x TSC T6000e Guide

Printing and Encoding METAL SKIN Labels

Contents

About TSC Printronix's Industrial T6000e RFID Printer 1

About Xerafy Metal Skin On Metal RFID Labels 2

Printing and Encoding METAL SKIN Mercury on TSC Printronix T6000e RFID Printer 3

Printing and Encoding METAL SKIN Delta on TSC Printronix T6000e RFID Printer 6

Printing and Encoding METAL SKIN Platinum on TSC Printronix T6000e RFID Printer 8

Printing and Encoding METAL SKIN Titanium on TSC Printronix T6000e RFID Printer 11

1-How To Select the Right TSC Printronix Printer 14

2-HowTo Set Up Your TSC Printronix T6000e RFID Printer 15

About TSC Printronix's Industrial T6000e RFID Printer

Xerafy and TSC Printronix have developed this guide to help users easily set up Xerafy's METAL SKIN tags on the industry-leading TSC Printronix RFID printers.



Additional support is available through both companies' support services. Contact information for support services can be found on www.xerafy.com and www.tscprinters.com.

About TSC Printronix

TSC Printronix Auto ID is a leading manufacturer and has sold more than 7.3 million printers worldwide. We pride ourselves on dedicated product and engineering support and our ability to tailor solutions to fit unique printing needs for all our customers, from small businesses to Fortune 500 companies.



TSC Industrial T6000e RFID Printer Support

TSC Printer Support

Additional support is available, contact us through our website.

About Xerafy

Xerafy offers eleven series of RAIN RFID UHF passive Tags and Labels and a full range of Custom Design capabilities to power every project.

At Xerafy, we share the vision of the Industrial IoT. With our technology, manufacturers and end-users create smart assets, enabling more efficient business processes and new product capabilities

Our mission: To push technological boundaries and solve the operational issues holding back Industry 4.0.

About Xerafy Metal Skin On Metal RFID Labels



Xerafy METAL SKIN series are printable On-Metal RFID labels engineered for Industrial RFID Systems. Their award-winning design ensures the extreme thinness and flexibility required for on-site printing and encoding.

Learn About Metal Skin

Xerafy METAL SKIN labels have been optimized for RFID systems with the following applications:

MRO Parts and Components
WIP Inventory
Automated Warehouse
Reusable Packaging and Containers
Data Centers
Electronic Devices
Hospital Equipment

Get Xerafy Product Guide

Printing and Encoding METAL SKIN Mercury on TSC Printronix T6000e RFID Printer

Largest Printable Labels

The Metal Skin® Mercury are the largest labels in the durable UHF RFID series, offering exceptional performance on metal and plastic surfaces.

Their extensive printable area is optimized for on-site printing and encoding, making it the ideal solution for inventory management and asset tracking systems. These labels support RF identification alongside human and computer-readable information such as barcodes and graphics, ensuring comprehensive and efficient tracking.

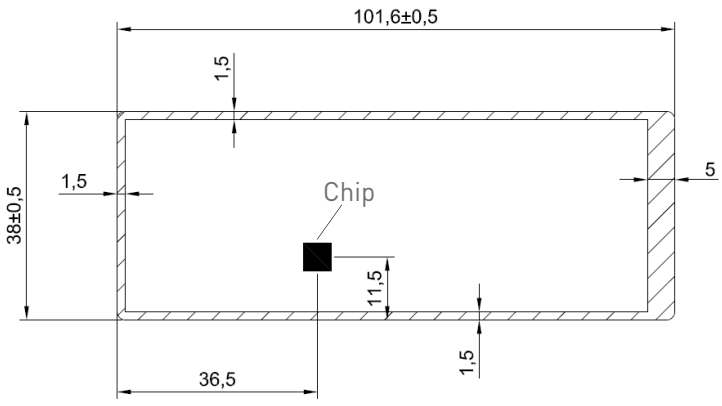
With their robust design and versatile application, Metal Skin® Mercury labels enhance the efficiency and accuracy of any tracking system.

1. Confirm the label model(s) you are using

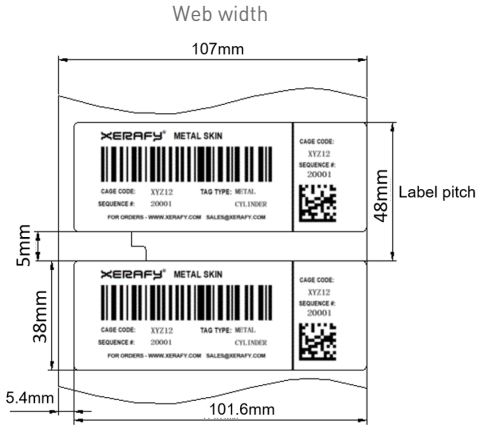
Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN MERCURY Largest Printable Label	X51A0-US100-U9 X51A0-EU100-U9	101.6 x 38 x 1	300 pcs/roll	
METAL SKIN MERCURY R6P Largest Printable Label with Impinj	X1040-US011-R6P X1040-EU011-R6P	100 x 40 x 1	300 pcs/roll	

Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN MERCURY 86 MAX Largest Printable Label	X8654-US011-R6P X8654-EU011-R6P	86 x 54 x 1.25	150 pcs/roll	
METAL SKIN MERCURY 95 MAX Max Range with NXP	X9522-US011-U8 X9522-EU011-U8	95 x 22 x 1.25	500 pcs/roll	

2. Recommended Printing Area



Metal Skin Mercury



Metal Skin Mercury

1. Print only within the blank area. Do not print on the shaded area.
2. Avoid printing over the chip location, indicated by the black square above.

3. Printer Settings for Metal Skin Mercury

The TSC Industrial T6000e RFID Printers support Auto Calibration, no need for Manual Calibration.

ETSI Placement and configurations valid for European (ETSI) frequency range, 865-868MHZ

FCC Placement and configurations valid for Frequencies that fall within the FCC range, 902-928MHZ

Ask Our Engineers

Printing and Encoding METAL SKIN Delta on TSC Printronix T6000e RFID Printer

Flexible Labeling Solutions

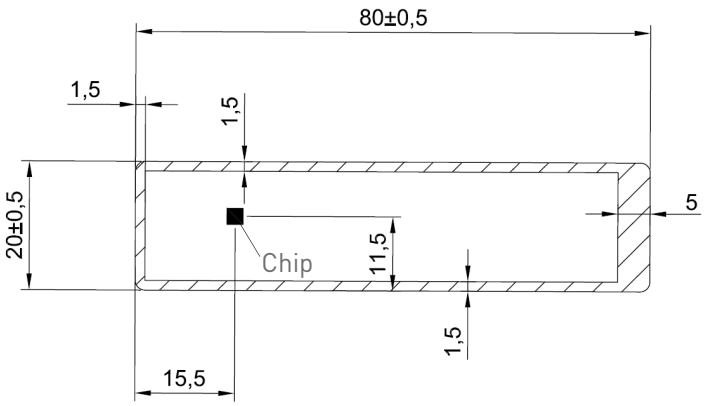
The Metal Skin® Delta are the most flexible labels in Xerafy's series of durable UHF RFID labels. The labels offer a unique combination of flexibility, durability, and performance, making them the ideal choice for asset labeling in demanding environments. Their enhanced read range is optimized for metal surfaces, while their flexibility and high-performance adhesive are perfect for curved and irregular surfaces.

With a large printable area for easy on-site printing, the Metal Skin® Delta labels suit a wide range of assets requiring durable identification.

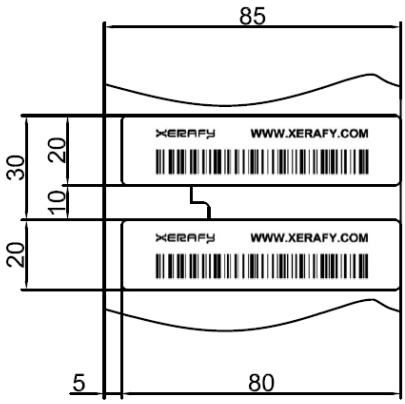
1. Confirm the label model(s) you are using

Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN DELTA Flexible Labeling Solutions	X8020-US100-R6P X8020-EU100-R6P	80 x 20 x 1	500 pcs/roll	
METAL SKIN DELTA U8 Flexible Labeling Solutions with NXP	X8040-US011-U8 X8040-EU011-U8	80 x 40 x 1	300 pcs/roll	

2. Recommended Printing Area



Metal Skin Delta



Metal Skin Delta

1. Print only within the blank area. Do not print on the shaded area.
2. Avoid printing over the chip location, indicated by the black square above.

3. Printer Settings for Metal Skin Delta

The TSC Industrial T6000e RFID Printers support Auto Calibration, no need for Manual Calibration.

ETSI Placement and configurations valid for European (ETSI) frequency range, 865-868MHZ

FCC Placement and configurations valid for Frequencies that fall within the FCC range, 902-928MHZ

Ask Our Engineers

Printing and Encoding METAL SKIN Platinum on TSC Printronix T6000e RFID Printer

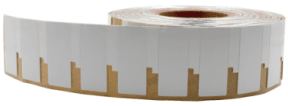
Universal Labeling Solutions

The Metal Skin® Platinum offer the best size-to-performance ratio in the series of durable UHF RFID labels. These universal labeling solutions boast outstanding read ranges on both metal and plastic surfaces, making them ideal for most assets and inventory. Their thin, durable material is optimized for on-demand printing, while the high-performance adhesive ensures secure bonding.

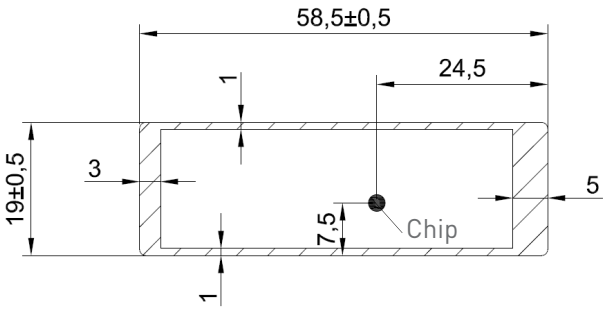
Perfect for automation in warehouses, distribution centers, and supply chains, the Metal Skin® Platinum labels are the optimal choice for comprehensive asset and inventory management.

1. Confirm the label model(s) you are using

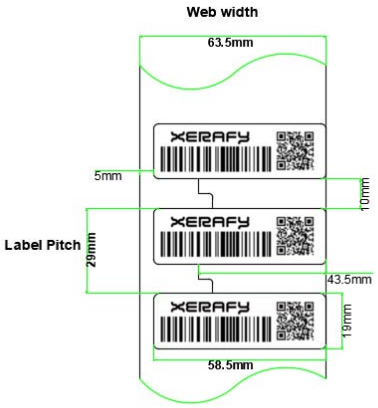
Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN PLATINUM Universal Labeling Solutions	X50A3-US011-U9 X50A3-EU011-U9	58.5 x 19 x 1	500 pcs/roll	
METAL SKIN PLATINUM R6P Universal Labeling Solutions with Impinj	X6025-US011-R6P X6025-EU011-R6P	60 x 25 x 1	500 pcs/roll	
METAL SKIN PLATINUM 55 UNIVERSAL For IT Assets	X5515-US011-U8 X5515-EU011-U8	55 x 15 x 1.25	500 pcs/roll	

Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN PLATINUM 60 MAX Max Range	X6025-US011-U8 X6025-EU011-U8	60 x 25 x 1	500 pcs/roll	
METAL SKIN PLATINUM 60 FLAG For Standing Out	X6921-GL011-U8	58.50 x 21 x 1	3000 pcs/roll	
METAL SKIN Platinum 60 TAMPER For Tamper Proof	X6025-UST11-R6P X6025-EUT11-R6P	60 x 25 x 1	500 pcs/roll	
METAL SKIN Platinum 64 SLIM For Slim Labeling	X6406-US011-U8 X6406-EU011-U8	64 x 6 x 1	500 pcs/roll	

2. Recommended Printing Area



Metal Skin Platinum



Metal Skin Platinum

1. Print only within the blank area. Do not print on the shaded area.
2. Avoid printing over the chip location, indicated by the black dot above.

3. Printer Settings for Metal Skin Platinum

The TSC Industrial T6000e RFID Printers support Auto Calibration, no need for Manual Calibration.

ETSI Placement and configurations valid for European (ETSI) frequency range, 865-868MHZ

FCC Placement and configurations valid for Frequencies that fall within the FCC range, 902-928MHZ

Ask Our Engineers

Printing and Encoding METAL SKIN Titanium on TSC Printronix T6000e RFID Printer

Smallest RFID Stickers

The Metal Skin® Titanium are the smallest in Xerafy's series of durable UHF RFID labels, delivering superior performance for applications where size is critical.

Designed for versatility, they operate effectively both on-metal and off, offering a cost-effective RFID tracking solution with their industry-strength adhesives.

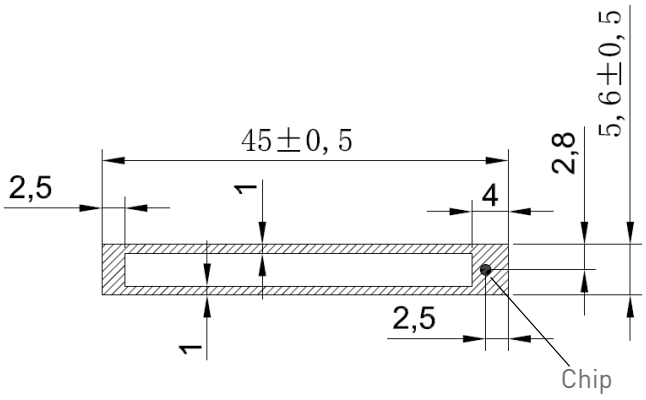
These printable labels are ideal for various assets, including electronic devices, IT equipment, medical supplies, and other high-value items. The Metal Skin® Titanium labels combine a compact design with durable identification, ensuring precise and reliable asset tracking.

1. Confirm the label model(s) you are using

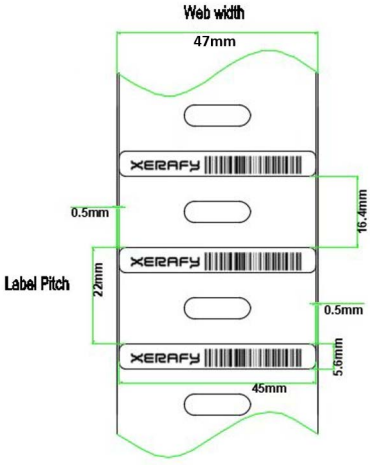
Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN TITANIUM Smallest RFID Stickers	X5220-US100-U9 X5220-EU100-U9	45 x 5.6 x 1	500 pcs/roll	
METAL SKIN TITANIUM M730 Smallest RFID Stickers with Impinj	X4506-US011-M730 X4506-EU011-M730	45 x 6 x 1	500 pcs/roll	
METAL SKIN TITANIUM 48 LIQUID For Liquids	X4804-US011-U8 X4804-EU011-U8	48 x 4 x 1	1000 pcs/roll	

Product Name	P/Ns	Size (mm)	Rolls	Orientation
METAL SKIN TITANIUM 30 SMALLEST Market Smallest	X3006-US011-U9xe X3006-EU011-U9xe	30 x 6 x 1	500 pcs/roll	
METAL SKIN TITANIUM 25 LASSO Max Range with NXP	X6813-US011-U9 X6813-EU011-U9	68 x 13 x 1	2500 pcs/roll	
METAL SKIN TITANIUM 25 HF For HF Tracking	X2525-HF011-FM1108	ø 25 x 1	2500 pcs/roll	

2. Recommended Printing Area



Metal Skin Titanium



Metal Skin Titanium

1. Print only within the blank area. Do not print on the shaded area.
2. Avoid printing over the chip location, indicated by the black dot above.

3. Printer Settings for Metal Skin Titanium

The TSC Industrial T6000e RFID Printers support Auto Calibration, no need for Manual Calibration.

ETSI Placement and configurations valid for European (ETSI) frequency range, 865-868MHZ

FCC Placement and configurations valid for Frequencies that fall within the FCC range, 902-928MHZ

Ask Our Engineers

1. How To Select the Right TSC Printronix Printer

To select the correct RFID printer for working with on-metal tags, such as the Xerafy METAL SKIN series, several factors need to be considered:

A) The printer should have an encoding antenna above the label path to ensure reliable communication with the tag. Traditionally, RFID printers had the encoding antenna below the label path, but this is problematic when it comes to working with on-metal tags. Make sure the printer you select has an above-path encoding antenna, such as TSC Printronix's T6000e and T4000 series printers.

B) The second factor to consider is media handling and media tolerance specs. Both the T6000e and T4000 have superb media handling, developed with on-metal tags in mind to accommodate the deep gaps, abrupt edges and even backfeed in the event of voiding a bad tag. For the media tolerance specs, the T6000e has a maximum media thickness spec of 2.2mm, whereas the T4000 has a maximum media thickness spec of 1.2mm, so not all METAL SKIN tags will work with the T4000. Make sure to check the various tags' thicknesses before selecting your printer:









Model		T6000e RFID 4"	T6000e RFID 6"	T4000 RFID	T800 RFID	PEX-2000 RFID 4"	PEX-2000 RFID 6"	Alpha-40L RFID
Printer Type		Industrial	Industrial	Industrial	Desktop	Print Engine	Print Engine	Mobile
Duty Cycle		10,000 labels / day	10,000 labels / day	5,000 labels / day	2,500 labels / day	20,000+ labels / day	20,000+ labels / day	[illegible]
RFID System	Encoding	RAIN / UHF						
	Standard	GS1 EPC Gen2 / ISO 18000-63						
	Antenna	Internal adjustable, external fixed	External fixed	External fixed	Internal adjustable	Internal fixed	Internal fixed	External fixed
	Printer Languages (RFID Encoding)	PGL, ZGL, STGL, MGL	PGL, ZGL, STGL, MGL	PGL, ZGL, STGL, MGL	PGL, ZGL, STGL, MGL	TSPL-EZD, TSPL-EZS	TSPL-EZD, TSPL-EZS	TSPL-EZC
RFID Labels	Types	Standard / on-metal / other	Standard / on-metal / other	Standard / on-metal / other	Standard	Standard / other		Standard (DT)
	Max. Media Thickness	2.2mm (0.088")	2.2mm (0.088")	1.2mm (0.05")	Standard RFID	1.2mm (0.05")		Standard RFID
	Label Pitch	Down to 15.9mm (0.625")						
	Calibration	Automatic						
Chip (IC) / Inlays		Chips: Support for all mainstream chips and many new advanced chips Inlays: Support for all common inlay designs Check our RFID Solution webpage for the latest list of validated chips and inlays						
RFID Data Validation		Encoding failures: Full / partial label overstrike (depends on label length) RFID label counter: Tracks good/bad labels				Encoding failures: Full label overstrike RFID label counter: Tracks good/bad labels		
Print Resolution		203dpi, 300dpi, 600dpi	203dpi, 300dpi	203dpi, 300dpi	203dpi, 300dpi	203dpi, 300dpi, 600dpi	203dpi, 300dpi	203dpi
Max. Print Speed		14ips@203dpi, 12ips@300dpi, 6ips@600dpi	12ips@203dpi, 10ips@300dpi	10ips@203dpi, 7ips@300dpi	8ips@203dpi, 6ips@300dpi	18ips@203 dpi, 14ips@300 dpi, 6ips@600 dpi	14ips@203dpi, 12ips@300dpi	Up to 5ips @203dpi
Media Print Width		104mm (4.1")	166mm (6.55")	104mm (4.1")	104mm (4.1")	104mm (4.1")	168 mm (6.61")	104mm (4.1")
Media Handling		Tear, cutter, peel/ rewind*, batch/rewind*	Tear, cutter	Tear, cutter	Tear, peel**, cutter**	Peel, tear	Peel, tear	Tear

Note: This spec is based on label / tag thickness + the thickness of the release liner. Release liner thickness is normally 0.1 0.15mm thick.

2. How To Set Up Your TSC Printronix T6000e RFID Printer

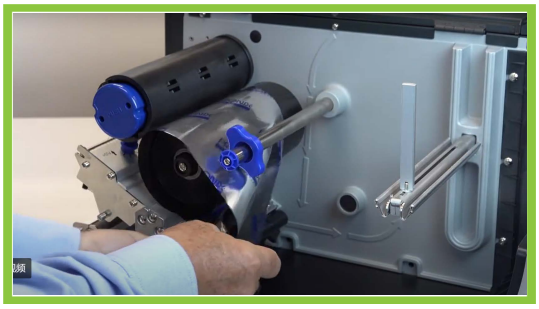
Note on tag roll and ribbon "wind" (orientation): Label printers are generally designed to work with various wind directions for both the labels / tags and the ribbon, however when working with RFID labels / tags, it is highly recommended to use the printer manufacturer's preferred orientations for both. Xerafy METAL SKIN tags, when used with TSC Printronix RFID printers, should be wound with the printable surface "out" and the bulk of the tag material on the inboard side of the printer as shown here:

The following photographs will guide you in properly loading ribbon and RFID media (label rolls) into the printer.



If you prefer to watch the video guide, click the button below.

Watch Video



The ribbon should be wound with coated side (the ink) out. A resin or wax-resin ribbon is recommended.

With the tag and ribbon rolls correctly wound, it's time to load the media (collective term for the tags and ribbon):



A) Open the cover



B) Open the printhead mechanism



C) Load the Xerafy METAL SKIN tags. Notes:

a) If your TSC Printronix RFID printer has an upper media-feed guide bar, it is recommended to not use this bar with stiffer, thicker RFID tags such as the Xerafy METAL SKIN series.

b) Make sure to align all other media-feed guides gently against the tags.

c) Both the TSC Printronix T6000e and T4000 models have a magnetic front panel which can be opened to more easily feed the labels under the encoding antenna. Make sure to close the magnetic panel before operation.

Auto RFID Calibration

With the tags and ribbon correctly loaded, it is now time to calibrate the printer for the tags in use. When working with RFID tags, there are two calibrations that must be performed: standard, non-RFID media length calibration and RFID calibration. Basic printer settings, such as "page separator" (gap or black mark), printer speed, and "intensity" (often referred to as "darkness") must also be set.

TSC Printronix RFID printers have simple Wizards to guide users through the calibrations and basic printer settings. This guide utilizes these Wizards for printer setup.

Non-RFID Media Length Calibration

The following photographs will guide you to run the non-RFID media length calibration and RFID calibration.



If you prefer to watch the video guide, click the button below.

Watch Video



A) Take the printer offline (green pause button on front panel of printer)



B) Use the arrow keys to scroll. Scroll to the left to select Wizard, then press the Enter key.

C) Scroll right to select Printer Setup. Hit Enter. If you receive a message that "Enter Switch Locked," press the up and down arrows simultaneously to unlock the Enter key. Pressing the up and down arrows simultaneously is a toggle for locking or unlocking the Enter key.

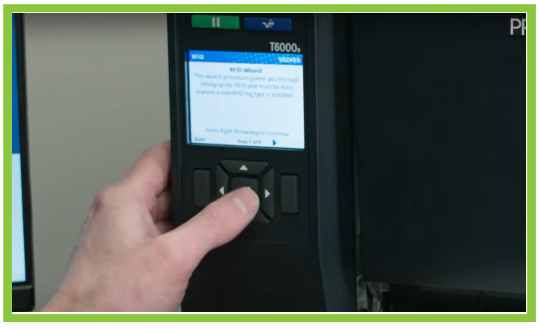
D) Follow this Wizard through to completion.

Notes: As you have already loaded the tags and ribbon, these steps can be skipped in the Wizard.

The Printer Setup Wizard takes care of basic printer settings and the critical step of non-RFID label calibration.



E) Completion of this Wizard will take you back to the main Wizards selection screen. Scroll right and down to select the RFID Wizard.



F) Run the RFID Wizard. You may skip the Gap/Mark Sensor selection and Auto-Calibrate (the non-RFID label calibration) steps in this Wizard as they were already completed in the Printer Setup Wizard. If you are using a T6000e series 4" print-width printer, you will be asked to configure the Antenna Setting. Default setting is "Internal." For on-metal tags, such as the Xerafy METAL SKIN series, change this to "External." The external encoding antenna is positioned above the tags, which is ideal for encoding on-metal tags.

Note: The key step in this Wizard is RFID Calibrate. Depending on label dimensions and inlay placement, RFID calibration should take between one and five minutes.

G) Upon completion of the RFID Wizard, push the green pause button to take the printer back online. The printer will prompt you to save these settings as a "Configuration." For now, accept the default choice of Save Permanently in Active Config. This step saves the various settings and calibrations you have just completed in what TSC Printronix calls a Configuration. TSC Printronix RFID printers can save up to eight different Configurations, and each can be given a custom name.