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Omni-ID®
Intelligent Tracking & Monitoring Devices

Sato CL4NX Guide

Printer set up

Reference Guide

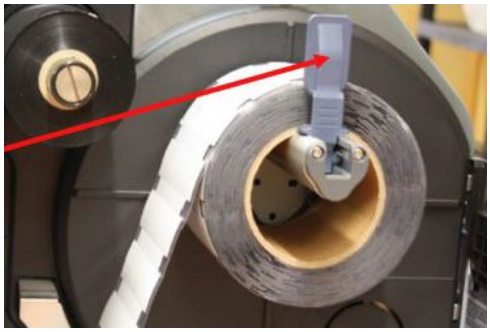
Contents

Printer setup

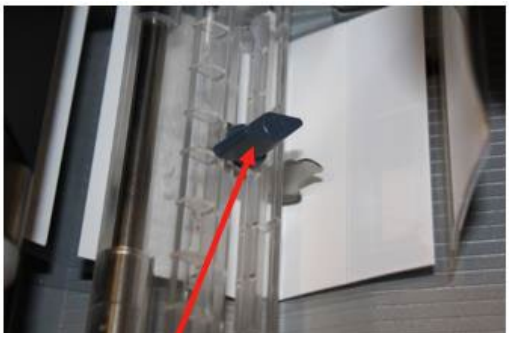
The following photographs will help you to load label rolls in the printer correctly.

1. Load label spool and lock in place with the **Guide Arm**.

Guide Arm



2. Slide **Guide 2** to the rightmost position and then move it back left to secure the label.



Guide 2
move to the right most position

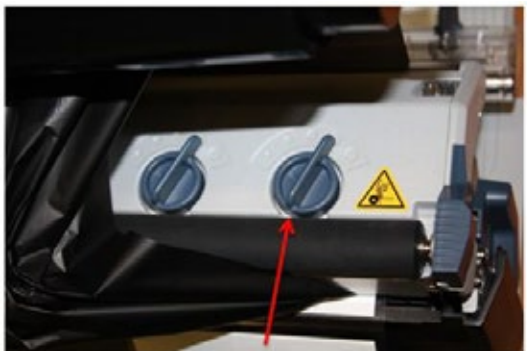
Guide 2
move to secure media

2. Locate the **Gap Sensor** to a position where it is able to detect the start and end of the RFID label.

I-Mark sensor **Gap sensor**

Printer setup

4. Feed the labels under the **Print Head**



Pressue dial (start low and increase)

Head pressure dials are located on top of the print head; these should be adjusted so that the print quality is consistent without applying excessive pressure.

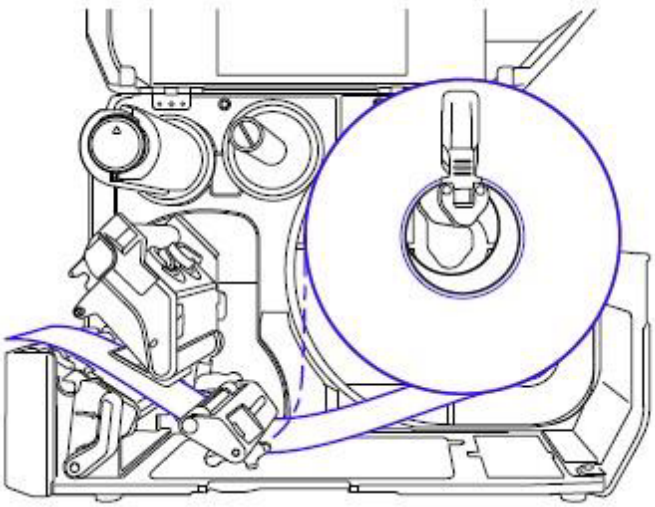
5. Final result

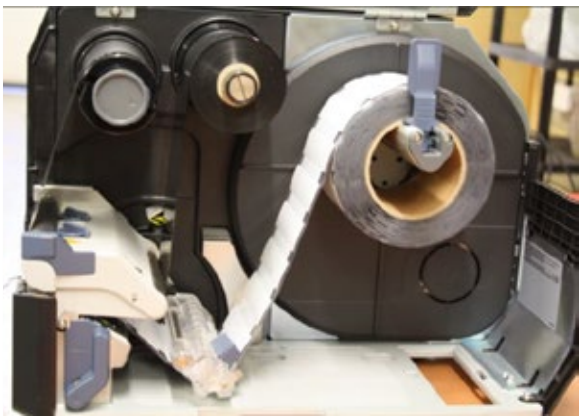
The routing path of the media is as shown on the right figure

When loading the media, make sure that the print side faces up

Face-in media

Face-out media





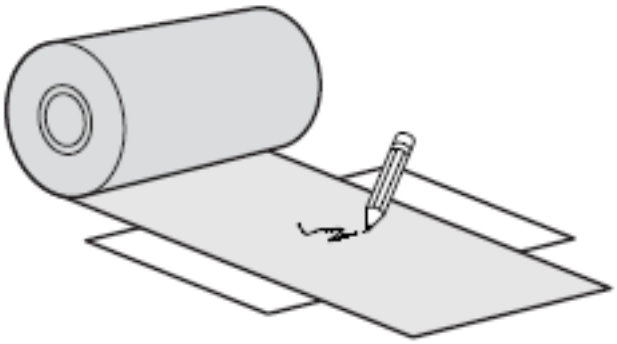
Ribbons

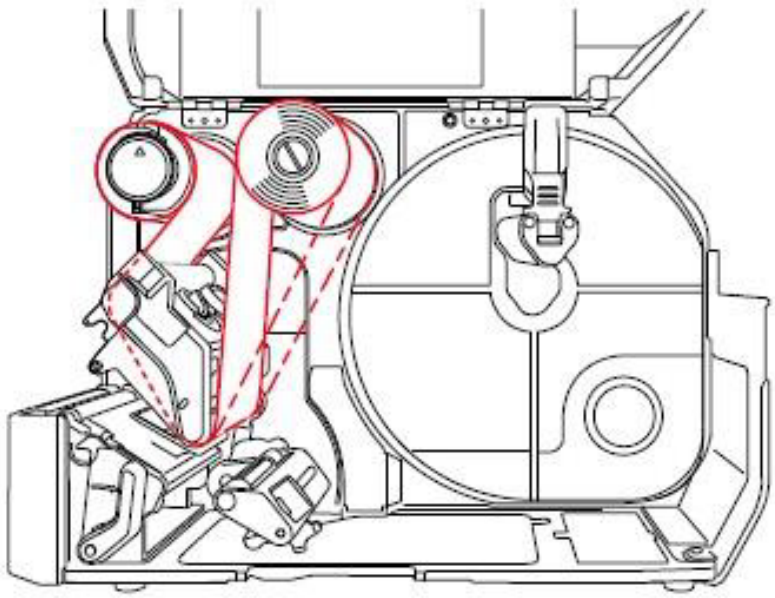
Omni-ID has validated ribbon compatibility with:

Manufacturer	Product	Type
SATO	Y70110200720	Full resin carbon ribbon

Load the ribbon into the printer so that the matt surface is visible to the human eye from the front of the printer.

The matt surface is the printing side and correct positioning will ensure correct printing onto the media.





The routing path of the media is as shown on the left figure

Face-in media

Face-out media

Printer settings

This section provides specific details and guidelines associated with encoding Omni-ID labels.

1. Setup RFID functionality of the printer, using the main control panel.

Printer must be calibrated for each label correctly

Gap sensing: Gap sensing must be used at all times; this will use the leading edge of the frame label to align the print with the commands sent from your software. Calibration of the Gap levels is required each time a different label type is used. This can be found under advanced printer settings, Gap Levels.

Important Settings

Darkness: Darkness should be adjusted to achieve optimal print quality.

Slowest speed: The slowest print speed that is available should be used to print

Compound labels: This is typically 2 inches per second.

Advanced printer adjustments: Pitch and offset should be set to 0mm.

Print Mode: Print Mode should be set to continues, with No Back feed. This is to avoid causing damage to the printer. The thicker IQ labels can damage the RFID antenna bracket if the off mode is used. This is due to the labels catching on the bracket as they back feed.

Printer Antenna

Sato CL4NX offers two antennas for RFID encoding: Standard and Short. Only one antenna can be used for encoding, not both at the same time. For encoding Omni-ID labels the Short antenna is recommended.

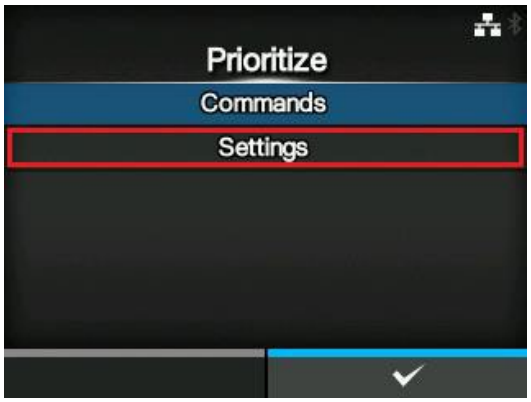
Prioritize

The printer settings can be prioritized to override the command settings and we do recommend you do this to avoid any erroneous settings in the command reaching the printer.

Command settings are those created in the label design software and the default setting on the printer.

On the printer menu screen:

- Printing
- Advanced
- Prioritize
- Settings
- when complete



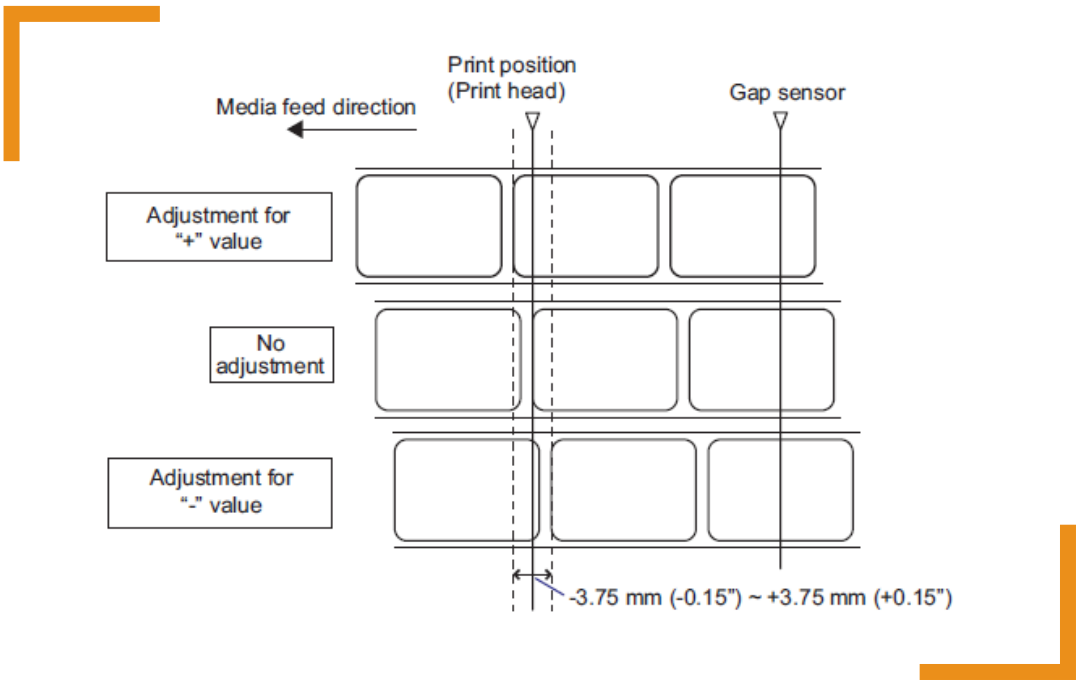
Optimized Encoding Settings For Omni-Id Labels

To achieve the best performance when encoding, the power should be set to the certified level. This level has been validated to ensure that adjacent labels are not programmed in error*.

*due to the size of the small IQ Label tags the sensor in the print head can sometimes detect the information from the tag behind, so it is necessary to change the sensor pitch to read the right tag and print the associated information.

Adjusting the Print Position

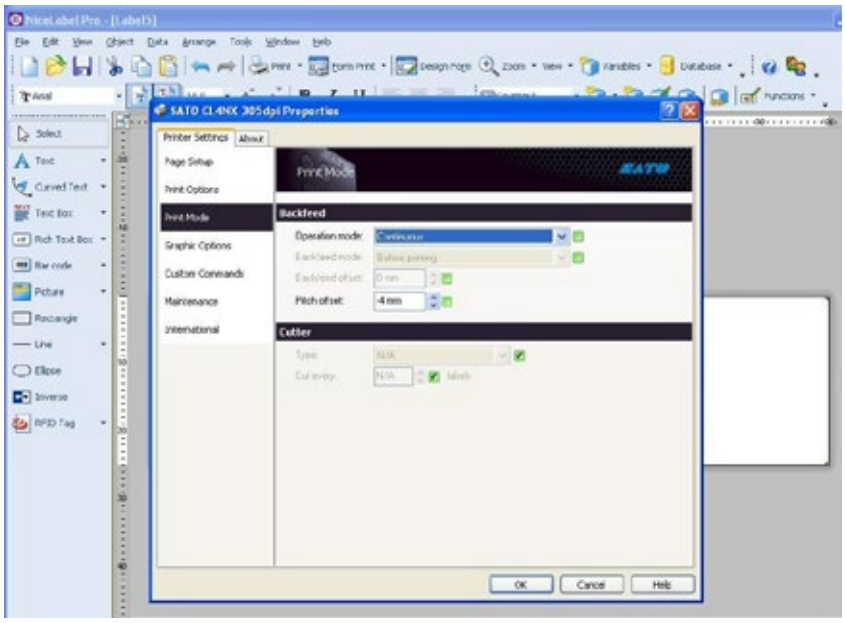
Set the **Pitch** in the **Printing > Advanced > Adjustments** menu to adjust the print position



Note: The above base reference point (print position) will be the stop position when the sensor type is set to Gap sensor.

The maximum pitch offset on the Sato CL4NX printer menu system is -3.75mm so if the pitch offset is more than that, you must set it in the NiceLabel software:

- Print Mode
- Backfeed
- Pitch offset

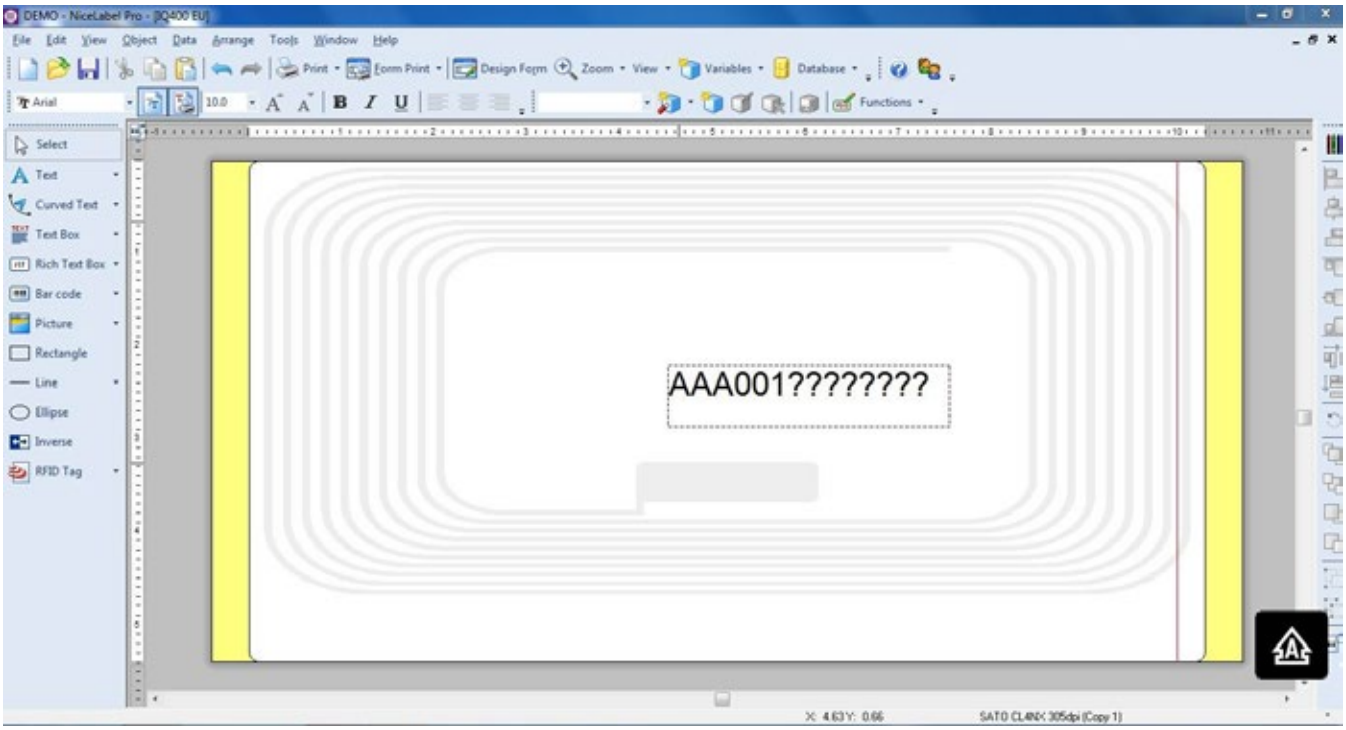


The table below provides the optimal settings for all variants of Omni-ID IQ Label tags:

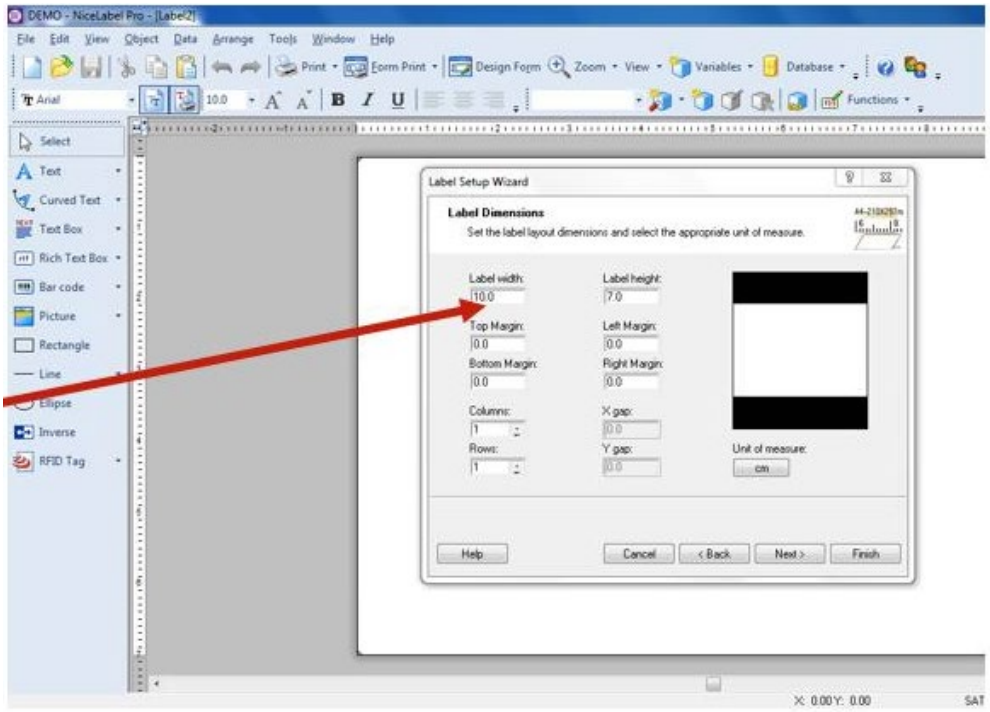
Omni-ID Tag	Menu/Settings							Menu/Interface/RFID				Menu /Printing /Advanced
	Darkness Range	Darkness	Speed	Sensor type	Print mode	Advanced		Antenna pitch	Write power	Read power	Tag offset	Pitch
						Calibrate Gap	Adj. / Offset					
IQ 400P	F	10	2	GAP	CONT	AUTO	0	SHORT	18	14	0	0
IQ 800P	F	10	2	GAP	CONT	AUTO	0	SHORT	17	11	0	0
IQ 1200G - EU	F	10	2	GAP	CONT	AUTO	0	SHORT	18	16	0	0
IQ 1200G - US	F	10	2	GAP	CONT	AUTO	0	SHORT	19	18	0	0
IQ 800G	F	10	2	GAP	CONT	AUTO	0	SHORT	14	14	0	0
IQ 150 - US - with GP	F	10	2	GAP	CONT	AUTO	0	SHORT	16	12	0	-4
IQ 150 - EU - with GP	F	10	2	GAP	CONT	AUTO	0	SHORT	24	20	0	-4
IQ 150 - US - without GP	F	10	2	GAP	CONT	AUTO	0	SHORT	22	15	1	0
IQ 150 - EU - without GP	F	10	2	GAP	CONT	AUTO	0	SHORT	22	20	0	0
IQ 350 - US with GP	F	10	2	GAP	CONT	AUTO	0	SHORT	14	12	1	0
IQ 350 - EU with GP	F	10	2	GAP	CONT	AUTO	0	SHORT	14	12	1	0
IQ 600 - US - with GP	F	10	2	GAP	CONT	AUTO	0	SHORT	22	15	10	0
IQ 600 - EU - with GP	F	10	2	GAP	CONT	AUTO	0	SHORT	22	15	10	0
IQ 600 - US - without GP	F	10	2	GAP	CONT	AUTO	0	SHORT	22	15	10	0
IQ 600 - EU - without GP	F	10	2	GAP	CONT	AUTO	0	SHORT	22	15	10	0

Software setup

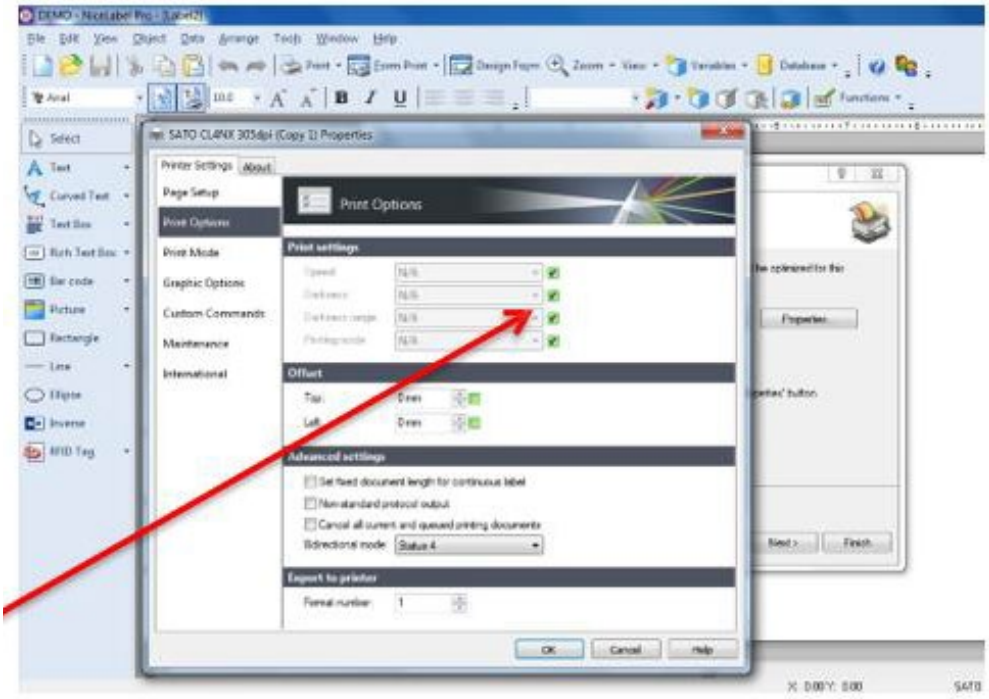
Recommended software for Sato CL4NX is NiceLabel Pro, Please Refer to NiceLabel Designer Pro user guide for detailed instructions (link is on Page 2)



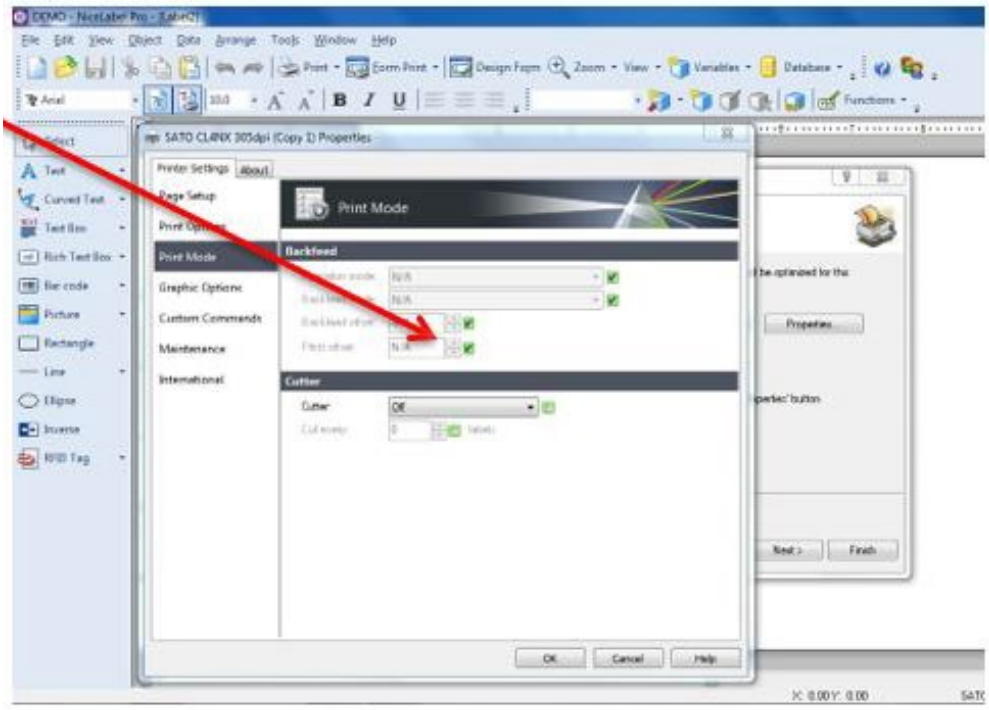
Insert label dimemsions



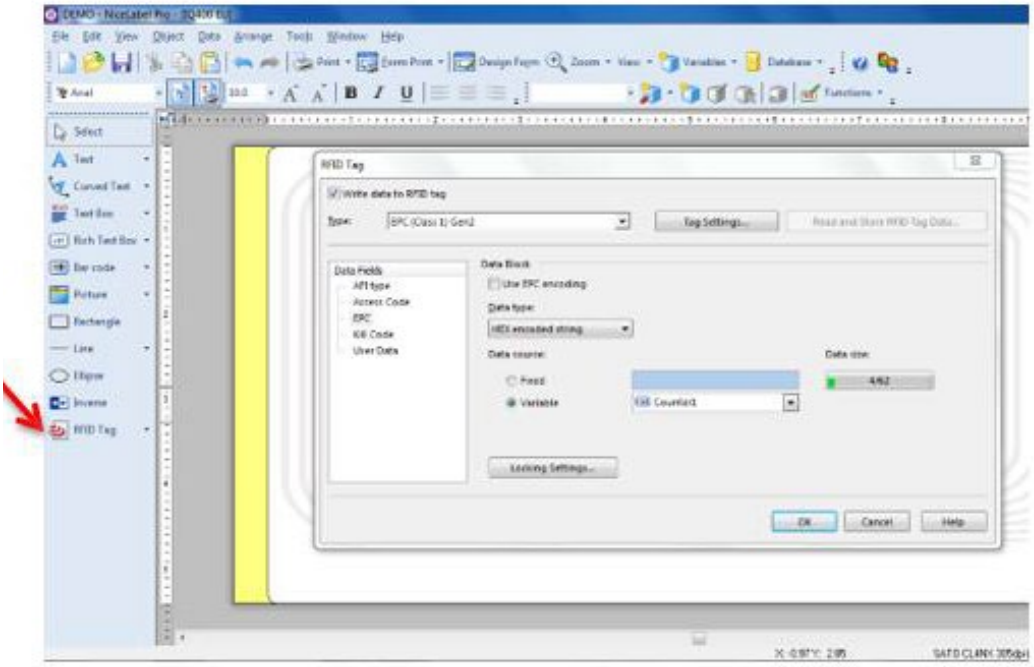
Check all boxes in ‘Print Setting’



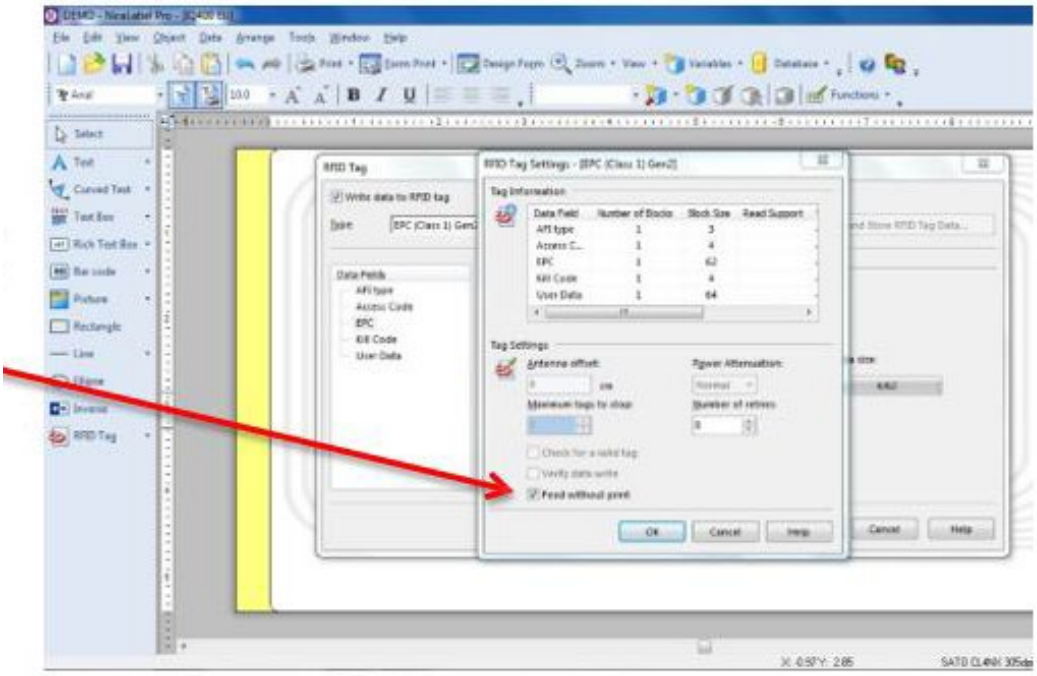
Use print settings from the printer



To enable RFID encoding, choose the RFID settings



The 'Feed without print' box is checked by default. Please uncheck this box. If box is checked, the printer will not print and only encode the labels.



Print Troubleshooting

Issue	Possible cause	Solution
Labels won't feed	Sensor location Sensor setting	Re-locate sensor Check gap sensing in menu Re-calibrate sensor if necessary.
Barcode not straight	Labels slipping	Increase head pressure or change roller under head
No print at all	Ribbon in upside down Wrong ribbon	Turn ribbon around Change ribbon to known good ribbon.
Partial print on one side	Head pressure	Re-balance
Print blurring	Too much ink	Reduce darkness
Print too light	Too little ink	Increase darkness Slow print speed Increase head pressure both sides

Encoding Troubleshooting

Issue	Possible cause	Solution
Multi tag error	Reading more than one tag	Turn the read power down
Tag not found	Cannot read or write the ag	Adjust the read and/or write power
Read only error	Calibration is wrong	Turn the write power up
Encoding adjacent label	The distance between labels is too small	Adjust Tag offset
Printer missing tag between each printed tag	Gap Levels Incorrec	Re calibrate Gap Levels
Print without RFID encoding	'Write data to RFID tag' deselected	Select 'write data to RFID tag' in s/w
WRITE TAG ERROR displayed on label and RFID tag error code # 1018 displayed	Encoding data type is set to ASCII string	Select HEX encoded string in data type menu

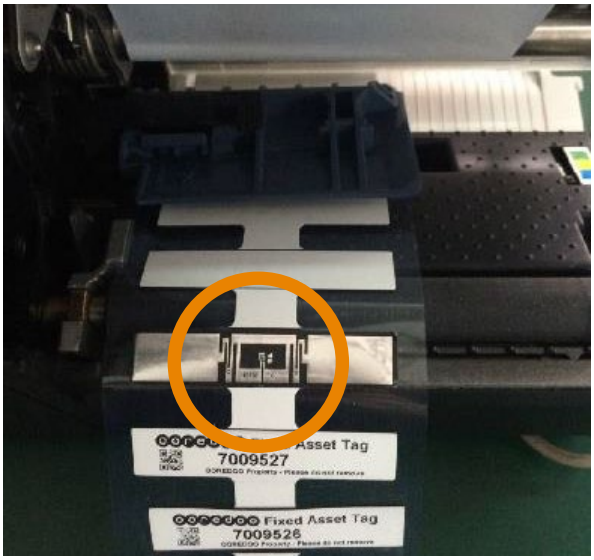
Label Orientation

Omni-ID IQ Label tags are supplied on the roll with the media facing out and the antenna facing up. This is the position the labels should be retained in for successful encoding and printing.

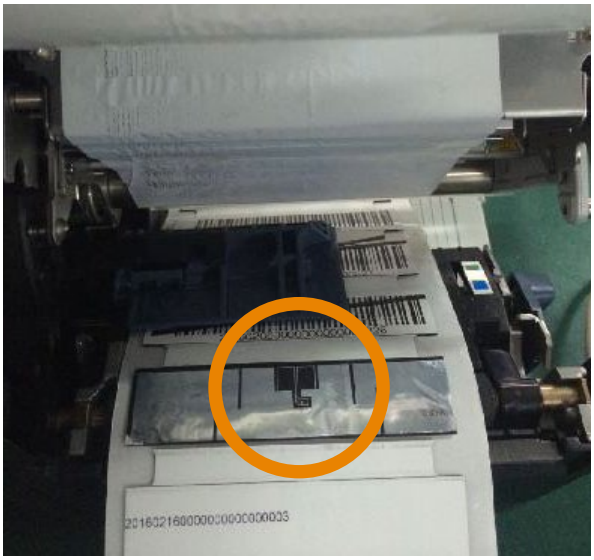
If in any instance you unroll the labels (i.e. to split a large roll into a smaller roll), you must ensure to re-roll them in the correct orientation.

The images below show the antenna exposed and in the correct orientation:

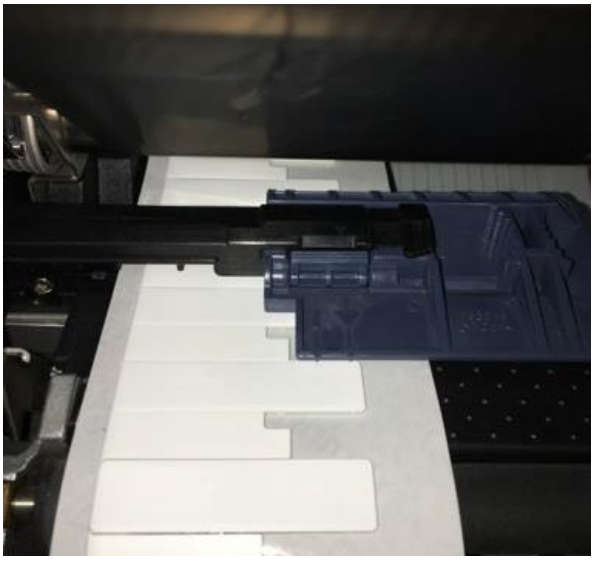
IQ 150 in printer – media facing out, antenna facing up



IQ 600 in printer – media facing out, antenna facing up



IQ 350 in printer – media facing out



Encoding Standards

Omni-ID tags can be encoded with any hexadecimal code, however GS1 have interoperability standards which can be used to help in situations where multiple organizations need to read the tag.

Examples of such standards include: SGTIN-96, GIAI-96 and GID-96

It is the Users responsibility to define the code if Omni-ID is providing service bureau.

See “Omni-ID Standard Service Bureau reference guide” for assistance with sequencing compliance

Example of GID-96bit scheme:

	Header	General Manager Number	Object Class	Serial Number
Data	8bits	28bit	24bit	36bit
Number of Hexadecimal characters	2	7	6	9
Example of data string *(in Hexadecimal)*	35	23AFB84	AB12FE	000000001

Header
This is a static binary number (which is converted into hexadecimal) that identifies that the coding system being used is GID-96bit.

General Manager Number
This is a number which identifies the Company which is responsible for allocating the object class and the serial number, this is assigned by GS1/ EPC global.

Object Class
This number defines the type of item that is being tagged, this might be a type of hardware, or a component in a larger assembly.

Serial Number
This is the unique number used to identify the specific item, typically this is the part of the EPC number that this serialized.

Omni-ID®

Intelligent Tracking & Monitoring Devices

Omni-ID is the leading supplier of passive, low-profile UHF RFID solutions. Through our patented technology, Omni-ID “cracked the code” to overcome the problems traditionally associated with RFID, enabling a broad range of new applications that improve accuracy and efficiency in asset tracking, supply chain management and work-in-process.

Our family of versatile RFID tags works reliably in the harshest environments, including on, off, and near metal and liquids and excels in solving tracking and identification challenges with unprecedented accuracy.

With offices in the USA, UK, Asia and India backed up by a purpose-built manufacturing facility in China, our mission is to drive the widespread adoption of RFID and wider IoT technologies as the optimal tracking and identification devices.

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