



JCM Products Quick Reference Guide

iPRO™ Units



NOTE: Due to advancements in related industry technologies and future product development, the information in this guide is subject to change without notice.

For more information about product set-up, use, testing procedures and troubleshooting methods, please contact the Technical Support Division of Customer Service via the email addresses listed below:

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iPRO™ Units

QUICK REFERENCE TROUBLESHOOTING GUIDE

Table 1 lists Issues, Probable Causes and Possible Solutions when troubleshooting an iPRO™ Unit.

Table 1 iPRO Troubleshooting Descriptions

Issue	Probable Cause	Possible Solutions
iPRO not working	No External Power	Verify 12Vdc power supply is connected and all harnesses are securely connected.
	Corrupted Software	Download the correct software.
	CPU Board Failure	Test and/or replace CPU board
Banknote Jams occurring	Drive belts dirty	Clean the belts and rollers
	Pressure Roller spring missing or weak	Check the Roller Spring tension, replace if needed
	Foreign material in the Transport Path	Clean the Transport Path, remove foreign material
	iPRO is not properly seated	Re-seat the Acceptor into the Frame, ensure latches are secure
	Banknote width not in specification	iPRO 100 Banknote is wider than 85mm or narrower than 62mm
Low Acceptance Rate	Dirt/debris on the sensors, rollers and belts	Clean the Transport Path. See Preventive Maintenance procedure
	Wrong or old software installed	Verify the software is the correct version and supports the currency
	Software not correct for the Banknotes	Verify the Banknotes will be accepted by the software
	Calibration not completed after repair	Re-calibrate the Sensors
Upper Guide will not open	Centering Guides are not in home position	Use a 2.5 hex nut driver to open the Centering Guides and check for debris. Reset the Acceptor,
All Banknotes being rejected	Incorrect Software	Download the correct Software

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Table 1 iPRO Troubleshooting Descriptions (Continued)









Issue	Probable Cause	Possible Solutions
All Banknotes being rejected	Incorrect DIP Switch Setting	Enable all denomination acceptance by switching all DIP Switches OFF
	Banknote acceptance is inhibited by the Host	Enable Host Banknote Acceptance
	Upper/Lower Sensor Board Failure	Change the Upper and/or Lower Sensor Boards with known good boards
	Unit was not calibrated after repair	Re-calibrate the Sensors
Motor continues to run	Foreign material or Banknote jammed in the Transport Path	Open the Upper Guide and remove any debris or Banknote. Clean the Transport, if needed.
	Upper Guide is open	Firmly close the Upper Guide
	Motor Drive failure	Run the Transport Motor test; if failure occurs, replace the motor or the CPU Board
Cannot enter Test Mode	Incorrect DIP Switch Setting	Set DIP Switches #1 thru #7 OFF, and Switch #8 ON.
	DIP Switch Failure	Perform a DIP Switch test to confirm operation
	CPU Board Failure	Exchange the CPU with a known good board.
Cannot communicate with the Host Machine	DIP Switch Settings are incorrect	Set DIP Switches #3 and #5 for the correct communications
	Connectors are off or loose	Firmly re-seat all the communications connectors
	Damaged Connector Pins	Check for bent or missing pins in the connectors
	CPU Board Failure	Exchange the CPU with a known good board
	Incorrect interface	Verify the correct interface with the Host Machine

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DIP SWITCH SETTINGS

The iPRO Front Panel DIP Switches #1 through #8 should be set to OFF for Normal Operation. For information on Bill Acceptance settings, refer to the Software Information Sheet.

Communications settings (DIP Switches #3 and #5) appear below.

Switch 5	Switch 3	Signal Name
		RS232C
		Photo-Coupler Isolation
		cc-Talk
		Reserved

ICB and Recycler settings (DIP Switches #2 and #4) appear below.

Switch 2	Switch 4	Signal Name
		iPRO Unit with ICB
		iPRO Unit without ICB
		iPRO Unit using an RC Unit

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JCM TOOL SUITE

Performance Testing

Diagnostic Testing can be performed with either DIP Switch settings or using JCM Tool Suite.



NOTE: Refer to the “JCM iPRO™ Series Banknote Acceptor Operation and Maintenance Manual” (JCM Part No. 960-000162R) for more information about Performance Tests - DIP Switch Test.

The JCM Tool Suite Performance Test tab (Figure 1) can be used to perform the Operation, Device Function, Motor Speed and Motor Tests (described on the following page).

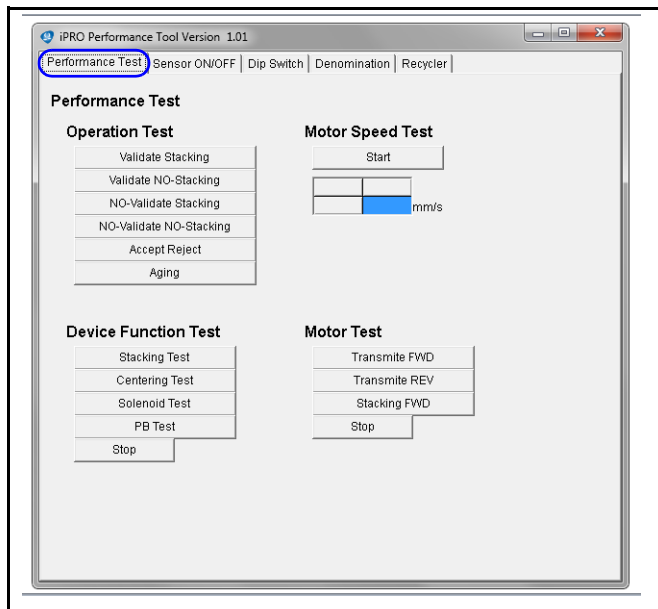


Figure 1 Performance Test Options

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OPERATION TEST

This test measures Banknote Acceptance and Aging. To perform it:

1. Click the desired test button (e.g., “Accept/Reject”).
2. Close JCM Tool Suite and cycle power to the iPRO Unit to halt the test.

DEVICE FUNCTION TEST

This option provides a functional test of iPRO components. To run it:

1. Click the desired test button (e.g., “Stacking Test”).
2. Click the “Stop” button to end the test.

MOTOR TEST

This option tests the iPRO Unit’s motors. To run it:

1. Click the desired test button (e.g., “Transmite FWD”).
2. Click the “Stop” button to end the test.

MOTOR SPEED TEST

This option displays the selected motor speed in mm/sec. To run it:

1. Click the “Start” button to display the speed of the motor being tested.
2. Close and restart JCM Tool Suite to halt the test.

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SENSOR ON/OFF TEST

This option tests iPRO Sensors and COB Sensors. To run it:

1. Click the “Start” button to begin the Sensor ON/OFF Test.
2. Block each Sensor. Under normal operation, the Positioning or Validation Sensor displays OFF → ON transition.
3. Click the “Stop” button to halt the test.

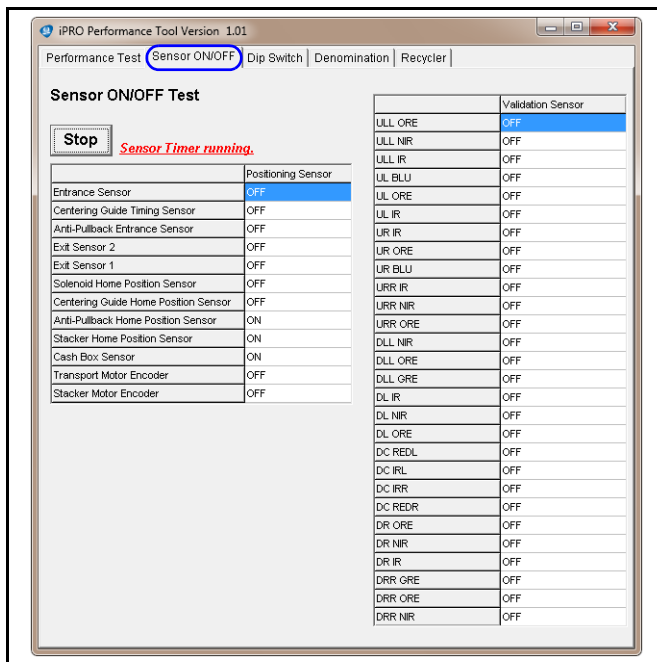


Figure 2 Sensor ON/OFF Test Indicators

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DIP SWITCH TEST

This option provides a functional test of the DIP Switches. To run it:

1. Click the "Start" button to begin the DIP Switch Test.
2. Change each Switch position. As each position is changed, the indication changes from OFF → ON.
3. Click the "Stop" button to halt the test.

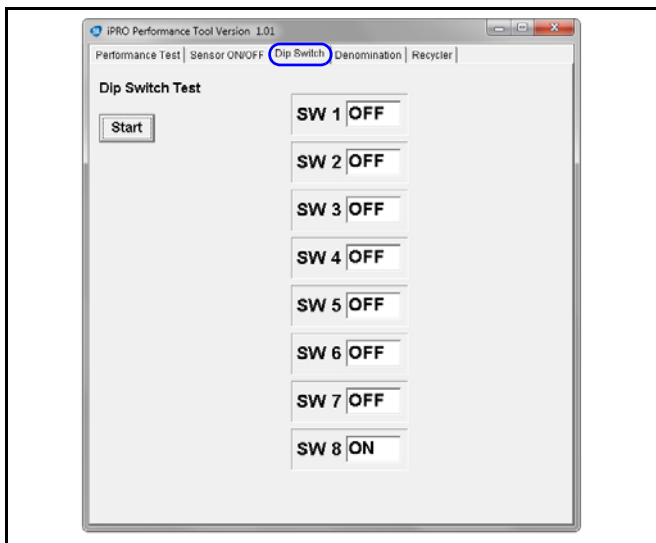


Figure 3 DIP Switch Test Indicators

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ERROR CODE TABLES

START UP

Start Up Errors occur while the iPRO Unit is performing a Self-Test during power up.

Table 2 Startup Error Codes

Red LED Flashes	Green LED State	Error	Causes and Solutions
1	ON	External Flash ROM Boot Program ROM Check Error	Boot Program is not correctly written to ROM or cannot be read. Replace the CPU Board.
2	ON	External Flash ROM Boot I/F ROM Check Error	Boot Program is not written correctly or cannot be read. Replace the CPU Board.
3	ON	External Flash ROM Main Program ROM Check Error	The Main Operating Program is not written to ROM or cannot be read. Replace the CPU Board.
4	ON	Reserved	
5	ON	CPU Internal RAM Check Error	RAM reading or writing was not properly performed. Replace the CPU Board.
6	ON	External Flash SD-RAM Error	External SD-RAM reading or writing was not properly performed. Reload software. Replace the CPU Board.
7	ON	External SRAM Error	SRAM reading or writing was not properly performed. Reload software. Replace the CPU Board.

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ICB ERRORS

ICB Errors may occur while the iPRO Unit is initializing.

Table 3 ICB Error Codes

Red LED Flashes	Green LED State	Error	Causes and Solutions
3	OFF	Incorrect ICB Setting	ICB Function is disabled on the iPRO Unit. The Cash Box ICB is active.
11	OFF	ICB Communications Error	ICB function is enabled on the iPRO Unit. The Cash Box ICB module is turned OFF or is missing.
12	OFF	ICB Checksum Error	ICB Data is corrupted. Initialize the Cash Box ICB Module.
13	OFF	ICB Number incorrect	The iPRO Asset Number does not match the Cash Box Asset Number. Install an initialized Cash Box.
14	OFF	ICB Initialization Error	The ICB Module on the Cash Box has not been initialized. Place the Cash Box on the Read/Write Tool to initialize.
15	OFF	ICB Module Failure	The ICB Module is not operating properly. Replace the module.

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OPERATION ERRORS

Operational Errors occur while the iPRO Unit is functional, and/or is accepting a Banknote or Ticket.

Table 4 Operation Error Codes

Red LED Flashes	Green LED State	Error	Causes and Solutions
1	OFF	Cash Box Full	A Full Cash Box was detected. Replace the Cash Box with an empty one.
2	OFF	Pusher Mechanism, Home Position Error	When stacking Banknotes, the Pusher Mechanism is not returning to the Home Position. Check for jams and debris in the Cash Box. Replace the Pusher Mechanism.
3	OFF	Banknote Jam (Cash Box)	When transporting a Banknote to the Cash Box, Sensors are not detecting the Banknote. Check for a jammed Banknote or debris blocking the Banknote.
4	OFF	Banknote Jam (Transport)	When transporting a Banknote, Sensors are not detecting the presence of a Banknote in the Transport Path. Check for a jammed Banknote or debris blocking the Transport Path.
5	OFF	Feed Motor Speed Error	While initializing, Motor Speed was either too fast or too slow. Perform a Motor Speed Test, check for jammed belts, and replace the motor.
6	OFF	Feed Motor Lockup	The Feed Motor is not moving. Check for jammed material in the Transport. Replace the Feed Motor and/or CPU Board.
7	OFF	Stacker Motor Lockup	The Stacker Motor is not moving. Check for jammed material in the Cash Box, replace the Sacker Motor and/or CPU Board.

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Table 4 Operation Error Codes (Continued)

Red LED Flashes	Green LED State	Error	Causes and Solutions
8	OFF	EEPROM Error	EEPROM reading or writing was not performed correctly. Recalibrate the iPRO Unit, and/or replace the CPU Board.
9	OFF	Anti-Pullback Unit Error	The Anti-Pullback Unit is not performing properly. Perform the Pullback Assembly test, and check for jammed Banknotes in the Pullback Assembly, Replace if error continues.
10	OFF	Cash Box Removed	The Cash Box has been removed or is not seated in the Frame. Re-seat the Cash Box. Test the Cash Box Present Sensor.
11	OFF	Reserved	
12	OFF	Fraud Detection	Sensors detected Banknote movement in the wrong direction. Test the iPRO Unit Sensors.
13	OFF	Solenoid Roller Error	Movement of the Solenoid Roller is not detected. Perform the Solenoid test, and replace the Solenoid, if necessary.
14	OFF	Centering Mechanism	The Centering Mechanism is not moving. Perform a Centering Mechanism Test. Clean or repair the Centering Mechanism.

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RETURN/REJECT ERRORS

Reject or Return Errors occur when a Banknote is returned without being validated.

Table 5 Return/Reject Error Codes

Red LED Flashes	Green LED State	Error	Causes and Solutions
OFF	1	Skewed Insertion	Banknote inserted at an angle or was not Centered. Check Centering Mechanism.
OFF	2	Abnormal Magnetic Detected	Magnetic Sensor detected an Abnormal Banknote. Clean the Magnetic head, and Calibrate the Unit.
OFF	3	Remaining Banknotes Returned	Banknotes detected in the Banknote Path during initialization. Clean the iPRO Unit, test Sensors and calibrate the iPRO Unit.
OFF	4	Magnification Error	When reading the Banknote pattern, the magnetic pattern was abnormal. Clean and calibrate the iPRO Unit.
OFF	5	Banknote Transporting Error	Sensors did not detect a Banknote moving through the iPRO Unit. Check for debris, clean and calibrate the iPRO Unit.
OFF	6	Reserved	
OFF	7	Pattern Error	Line Sensor detected an abnormal Banknote. Clean and calibrate the iPRO Unit.
OFF	8	Photo Level Error	While processing a Banknote, abnormal conditions were detected (Tape). Clean and calibrate the iPRO Unit.
OFF	9	Inhibited Banknote	Banknote returned due to DIP Switch setting or Command signal. Check proper DIP Switch setting and communications with Host.

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Table 5 Return/Reject Error Codes (Continued)

Red LED Flashes	Green LED State	Error	Causes and Solutions
OFF	10	Return Command Received	Banknote returned commanded by the Host. Check the Host settings.
OFF	11	Reserved	
OFF	12	Fraud Detected	Sensors detected improper Banknote movement. Perform a Sensor Test, clean and calibrate the iPRO Unit.
OFF	13	Banknote Length Error	The Line Sensor calculated the Banknote as too long or too short. Clean the Transport Path.
OFF	14	2-color Margin Error	The Line Sensors calculated that the 2-color Banknote Margin was too high. Perform a Sensor Test, clean and calibrate the iPRO Unit.
OFF	15	Suspect Counterfeit detected	The Banknote was detected as a suspect counterfeit. Clean and calibrate the iPRO Unit.
OFF	16	3-color Comparison Error	The Line Sensors calculated a 3-color comparison that was too high. Clean and calibrate the iPRO Unit.

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BARCODE COUPON ERRORS

Barcode/Coupon Errors occur when an inserted Ticket is returned without being processed.

Table 6 Barcode Coupon Errors

Red LED Flashes	Green LED State	Error	Causes and Solutions
OFF	1	Barcode coupon not accepted	The iPRO Unit is not configured for Coupon/Ticket acceptance. Check DIP Switch settings and system settings.
OFF	2	Format Error	The Barcode format does not meet specifications. Verify that properly-formatted Barcode coupons are used.
OFF	3	Incorrect number of characters	The Barcode Reader detected an incorrect number of characters. Verify that proper coupons are being used. Clean and calibrate the iPRO Unit.
OFF	4	Start Bit Detection Error	The Start Bit of the Barcode Coupon was not detected. Check for properly-formatted Barcode Tickets. Clean and calibrate the iPRO Unit.
OFF	5	Stop Bit Detection Error	The Stop Bit of the Barcode Coupon was not detected. Check for properly-formatted Barcode Tickets.
OFF	6	Barcode Coupon Type Error	The format of the Barcode Coupon does not match the settings. Verify that properly-formatted Barcode Coupons are inserted. Clean and calibrate the iPRO Unit.
OFF	7	Abnormal Magnification	Sensors detected an abnormal Barcode Coupon Magnification condition. Clean and calibrate the iPRO Unit.

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Table 6 Barcode Coupon Errors (Continued)

Red LED Flashes	Green LED State	Error	Causes and Solutions
OFF	8	Double Insertion Error	Multiple coupons inserted at the same time. Insert a single Barcoded Coupon into the iPRO Unit.
OFF	9	Reserved	
OFF	10	Reserved	
OFF	11	Upside down insertion	Detected Barcode Coupon had been inserted upside down. Turn the Barcode Coupon over and re-insert it into the iPRO Unit.
OFF	12	Reserved	
OFF	13	Barcode Coupon Length Abnormal	Sensors detected a Barcode Coupon either shorter or longer than specified. Clean the Transport Path and calibrate the iPRO Unit.
OFF	14	ICB Enable/Disable Ticket Read and/or Setting Error	ICB Enable/Disable format or Machine Number Ticket format is improper. Use properly-formatted Enable/Disable/Asset Number Tickets. Ensure that ICB module is enabled with DIP Switch #2-1.

iPRO™ Units CALIBRATION

The iPRO Unit must be calibrated whenever any of the following conditions occur:

- Removal or replacement of a Sensor PCB;
- Replacement of the CPU;
- The iPRO Unit is cleaned.

CALIBRATING THE iPRO UNIT

Calibration of the iPRO Unit is a two-step process performed using the JCM Tool Suite iPRO Calibration Tool for Sensor Adjustment (Figure 4).

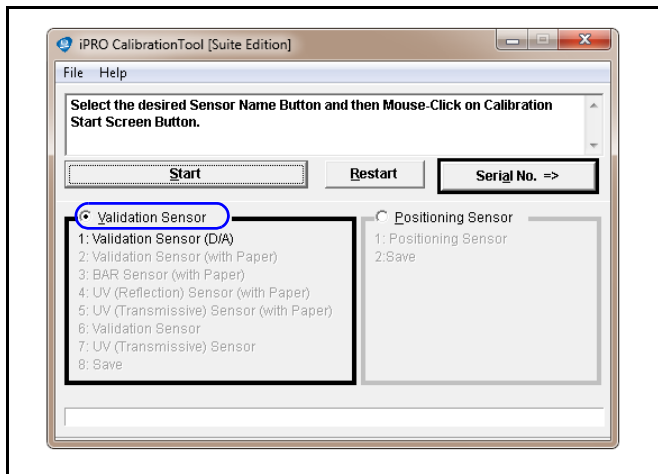


Figure 4 iPRO Calibration Tool (Suite Edition)

To calibrate the iPRO Unit:

1. Open the JCM Tool Suite Application, then select the iPRO Calibration Tool.
2. Click the appropriate radio button to calibrate the iPRO Sensors:

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- Click the Validation Sensor radio button to calibrate the COB Sensors and Barcode Sensor
 - Click the Positioning Sensor radio button to calibrate the Position Sensors.
3. Click the **“Start”** button to begin calibration.



NOTE: Refer to the “JCM iPRO™ Series Banknote Acceptor Operation and Maintenance Manual” (JCM Part No. 960-000162R) for a complete list of Calibration Error descriptions.

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CALIBRATION ERRORS

Table 7 identifies Calibration Program Errors (Calibration Program, Error Codes, Causes and Solutions).

Table 7 iPRO Calibration Errors

Calibration Program	Error Code	Cause and Solutions
Validation Sensor [D/A Value, non-paper]	01-YYYY-YYYY-YYYY-YYYY*	Validation (Line) Sensor error, refer to Validation Sensor Calibration Error Codes.
Validation Sensor with Paper	02-YYYY-YYYY-YYYY-YYYY*	Validation (Line) Sensor error, refer to Validation Sensor Calibration Error Codes.
Barcode Sensor	03-00-00-xx†	Barcode Sensor error, refer to Barcode Sensor Calibration Error Codes.
UV (Reflection) Sensor with Paper	04-00-00-00	UV (Reflection) calibration process failed; replace Upper UV Sensor.
UV (Transmissive) Sensor with Paper	05-00-00-00	UV (Transmissive) calibration process failed; replace UV Sensor.
Validation Sensor (non-Paper)	06-YYYY-YYYY-YYYY-YYYY*	Validation (Line) Sensor error, refer to Validation Sensor Calibration Error Codes.
UV (Transmissive) Sensor non-Paper	07-00-00-00	UV (Transmissive) calibration process failed; replace UV Sensor.
Positioning Sensor	09-ZZ-ZZ-ZZ‡	A Positioning Sensor failed to calibrate; refer to Positioning Sensor Calibration Error Codes,

* YYYY-YYYY-YYYY-YYYY - Refer to Page A-10 of the "JCM iPRO™ Series Banknote Acceptor Operation and Maintenance Manual" (JCM Part No. 960-000162R) for the specific Sensor that created the Error.

† xx - Refer to Page A-9 of the "JCM iPRO™ Series Banknote Acceptor Operation and Maintenance Manual" (JCM Part No. 960-000162R) for the specific Sensor information.

‡ ZZ-ZZ-ZZ - Refer to Page A-11 of the "JCM iPRO™ Series Banknote Acceptor Operation and Maintenance Manual" (JCM Part No. 960-000162R) for the specific Sensor that created the Error.

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DOWNLOADING SOFTWARE

The iPRO Unit Software can be updated using either the JCM Tool Suite Downloader Tool (Figure 5) or a BlueWave Download Tool. When performing a software upgrade, all DIP Switches on the iPRO Unit should be OFF (Normal Mode).



NOTE: If the iPRO Unit has a new CPU installed or if the iPRO Unit Software has been corrupted, turn DIP Switches #6, #7 and #8 ON to enable Forced Download Mode.

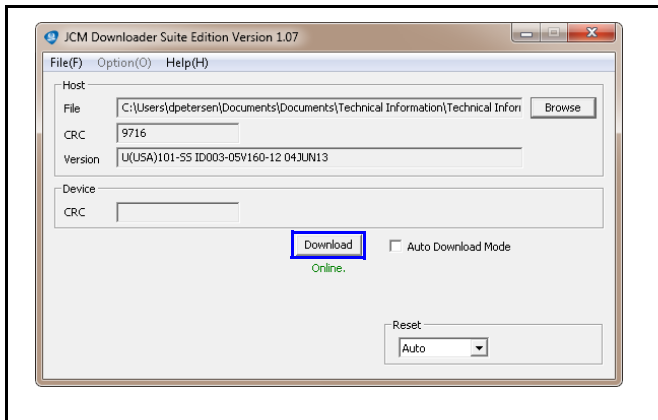


Figure 5 JCM Downloader Tool Suite Edition

Downloading using a PC

To download software to the iPRO Unit using a PC:

1. Apply Power to the iPRO Unit.
2. Connect the iPRO Unit to a PC using a USB Male "A" to mini "B" cable.
3. Open the JCM Tool Suite Application and select **Download**. The JCM Downloader Tool appears (Figure 5).

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4. Click "**Browse**" to locate and select the appropriate File to be downloaded to the iPRO Unit.
5. Click the "**Download**" button.



NOTE: Download progress is shown by a Barograph and a Percentage Complete indicator located above the Graph.

6. Verify that the display indicates "Download Success" at 100% completion.
7. The Download is now complete. Disconnect the USB Cable, and reset the iPRO Unit to Normal Mode.

Using the JCM BlueWave-2 Download Tool



NOTE: Refer to the "BlueWave 2.0™ Download Tool Operators Guide" (JCM Part No. 960-100924R) for detailed instructions.

To download software to the iPRO Unit using a BlueWave Device:

1. Copy the required Software File into a "DOWNLOAD" Folder on a Standard SD Memory Card.
2. Insert the SD Memory Card into the BlueWave Tool.
3. Apply Power to the iPRO Unit.
4. Turn the BlueWave Device's Power **ON**, and confirm that the Battery Life LED is illuminated **Green**.
5. Connect the BlueWave Device to the iPRO Unit using a USB Male "A" to mini "B" cable.



*NOTE: The Top BlueWave Device Status LED appears **Green** when the BlueWave and iPRO Unit are communicating.*

6. When the top BlueWave Device Status LED appears **Green**, press the "**LOAD**" Button on the BlueWave Device.
7. When the top BlueWave Device Status LED and the center SD Memory LED BOTH appear **Green**, downloading is complete. Switch the BlueWave Power **OFF**; disconnect the USB Cable, and reset the iPRO Unit to Normal Mode.

The BlueWave Tool Downloading process is now complete.

iPRO™ Units

PREVENTIVE MAINTENANCE

Preventive maintenance and cleaning of the iPRO Unit should be performed periodically for optimum performance. Consideration should be based on the environment where the product is installed, but the iPRO Unit should be cleaned at least once per year.

- Wipe clean all Sensors, Belts and Rollers with a clean (slightly damp) lint-free Microfiber cloth.
- The Sensor Lenses are transparent, handle them with care. To clean them, use a dry Micro-fiber, lint-free cloth. If the dry lint-free cloth does not clean them thoroughly, use a mild, non-abrasive detergent mixed with water to clean the Sensors. Wipe off any excess moisture from the iPRO Unit's surfaces.



WARNING: Do NOT use Alcohol, solvents, citrus based solutions or scouring agents to clean the iPRO! These can cause damage to the Validation Sensor lens and rollers.

CASH BOX PREVENTIVE MAINTENANCE

The following Periodic Maintenance checks must be routinely performed:

1. Use Compressed Air to blow out the Paper fibers and any other debris that may have built up in the Cash Box.
2. Clean the Stacker Feed Belts using a lint free cloth with a mild soap/water solution.



NOTE: The Stacking assembly may need to be removed from the Cash Box and disassembled to properly clean.

3. Check the Belts and all moving parts for wear and proper positioning. If this assembly does not operate properly, Banknote jams may increase.

iPRO™ Units

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