Atronic
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Bill Validator
GPT ARGUS (B; D)

Rev. 1.2

January 2004

www.atronic.com

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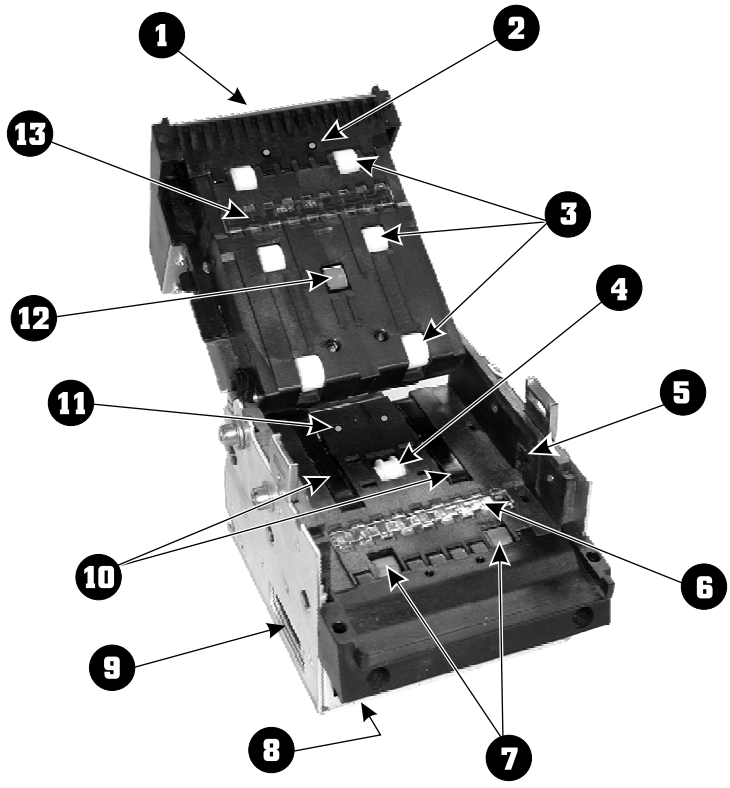
GPT Synergy Series
ARGUS-B (G3) and ARGUS-D (G3) Bill Validator

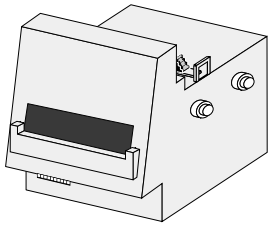
Features

- Light weight, self contained assembly
- Multi-Level High Security process
- Side-Looking Sensors
- LED illuminating runway lights
- User selectable currency denomination acceptance via host machine
- Easy opening spring latches design

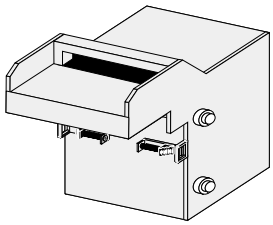
ARGUS-D G3 Validator Head opened



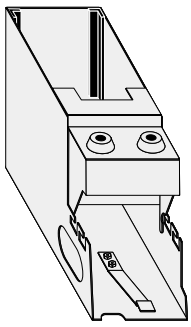
1 Upper-Guide Assembly	8 22-Pin Connector
2 Front Optical Sensor	9 DIP-Switches
3 Pressure Rollers (6 total)	10 Drive Belts
4 Mag Head Roller	11 Rear Optical Sensors
5 Side-Looking Sensor	12 Mag Head
6 Main Optics Window (lower)	13 Main Optics Window (upper)
7 Drive Rollers	



ARGUS-B Validator Head (Back Stack)



ARGUS-D Validator Head (Down Stack)

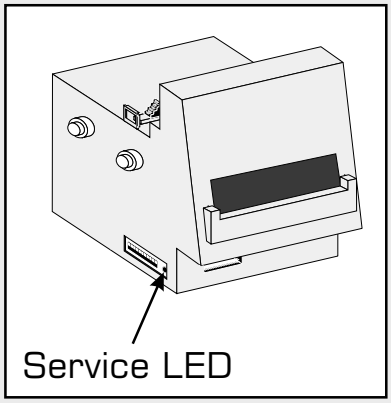


Enclosure for ARGUS Head

Details of Operation

1. Validator power up

a. The Service LED near the DIP-switch lights up.
b. The validator stepper motor is initiated and runs for approx. 2 seconds.
c. The stacker motor makes 2 or 3 cycles.
d. The CPU verifies that a stacker is attached. (If the stacker is missing the CPU inhibits the unit and sends a message to the host machine stating the malfunction).
e. The CPU enters idle mode. (Waiting for the Front Optical Sensors to indicate that a bill is being inserted).



2. Front Sensor activation

a. Once a bill has past the Front Optical Sensors, the validator starts the stepper motor and draws the bill into the channel.
b. The bill passes the main optics window and the mag head.
c. The CPU collects and analyses the optical and magnetic data.
d. The collected data is then compared with a known data base to determine validity and denomination of the bill.

3. Acceptance Routine

a. If the bill is determined to be valid the CPU continues in the sensor checking mode.
b. The rear channel flag is activated. This flag is used to signal the microprocessor that the bill has left the channel and determine the length of the bill for validation.
c. After the bill has passed the Side-Looking Sensor the motor is reversed to see if any foreign material is attached to the bill.
d. Once past the flag switch (Rear Optics), the bill enters the stacker and cannot be pulled out.

4. Rejection Process

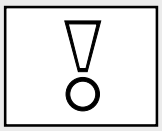
a. If a bill is determined to be invalid, the CPU will start the stepper motor in the reverse direction and reject the bill. After the bill is rejected the validator will go into idle mode.
b. If the bill is unable to clear the channel, the validator will enter the channel clearing routine. This routine jogs the bill and will be repeated up to five times or until the bill has cleared the channel.
c. After the fifth attempt, the CPU enters an inhibited state and will only return to idle state after the bill has been removed.

During the validation process the microprocessor makes decisions about the validity of the bill present. These decisions may be influenced by the programmed security level. The level will, generally, have no effect on the acceptance of bills in good condition, but may reduce the acceptance by highly circulated bills.

Technical Information

Inspection

1. Ensure the unit has not been dented or bent, check for "squareness", and all mounting surfaces are free from damage.
2. Check that there are no broken or loose components. (Gently shaking the unit will disclose any internal damage.)
3. Check all cables for cuts, breaks or other damage.
4. Open stacker door and check the pressure plate for damage and proper position.



Protocol V2.2

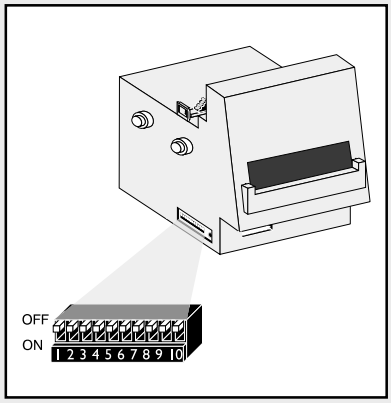
The Argus Bill Acceptor and the Atronic machine comunicate via the V2.2 protocol. The Argus Bill Acceptor uses the software information supplied by the Atronic machine to determine how the validator is to be set.

DIP-switches

During normal operation all DIP-switches should be in the OFF position (up). The DIP-switches are activated by the power up. Any changes to the DIP-switches during operation will have no effect until the next power up.

In Atronic machines only 3 DIP-switches are in use. Changes to the bill acceptance table are made via host machines Menu Setup.

DIP 7	To see the last five bills (Can also be seen in the Audit Menu)
DIP 8 & 9	For Video Level Adjustment (see page 6 for detail)



Validator Programming and Diagnostics

The ARGUS validators can be programmed by using the GPT ARGUS G3 Download-Kit (obtainable from Atronic). It contains a power supply, a RS-232 cable, a ARGUS Download Key and the Synergy G3comm2000c Software. You can also test IO ports, memory, stepper motor and bezel lights with this software. Please contact Atronic Technical Service for further information.

***Note**: After some software updates (e.g. updating to temp.comp software) it is necessary to do a Video Level Adjustment (VLA) directly after upload.*

VLA is described on page 8.

Maintenance

Most of the problems with the validators are caused by soiled optics, incorrect DIP-switch settings and foreign matter in the currency channel.

Component Checks

- Drive Belts:
Check for damage, debris and tension. The belts should not have excessive vertical deflection when, gently, pulled upwards.

- Magnetic head and roller:
Check for scratches, debris and also the roller spring for the proper tension.

- Optical components:
Check for debris and scratches.

Cleaning the ARGUS Validator

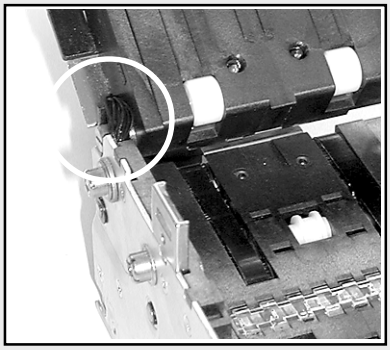
Depending on its environment and amout of use, the Argus Bill Validator may require periodic cleaning to restore the unit to optimum performance. Under normal use, it should be cleaned every 6 month. For unusual operating conditions more frequent cleaning will be required.

1. Open Main Door and turn power off.
2. Slide the Bill Validator Tray out.
3. Disconnect the connector cable and remove the Bill Validator Head from its mounting frame.
4. Open the Bill Validator Head by releasing the spring-loaded latches and swinging out the Upper-Guide Assembly.
5. Use a soft cotton cloth dampened with 90% isopropyl alcohol to carefully clean all parts in the Bill Channel. Remove all deposits from the rollers.

   ***Note**: Do not scrach any area, as this can damage the Validator.*
   - Do not allow liquid to enter the Vallidator Unit, as this can damage electrical components.
   - Do not use unapproved cleaners, as this can damage the surface of the optics.
   - Do not use cotton swabs, as this can leave unwanted material in the Bill Channel.

6. Carefully swing the Upper-Guide Assembly back to its fully closed (locked) position. Make sure no cable is squeezed by the Upper Guide Assembly.
7. Mount the Bill Acceptor Head back into its mounting frame and connect the connector cable
8. Slide the Bill Validator Tray in. Make sure that it is clamped in its position.
9. Apply power and close the Main Door. The Argus Bill Acceptor is now operational.

The use of Validator Cleaning Cards is not recommended. These cards need to rub against the optic and magnetic head in order to clean the components. In the ARGUS validator the optics are recessed and therefore cannot be reached by the Cleaning Card.

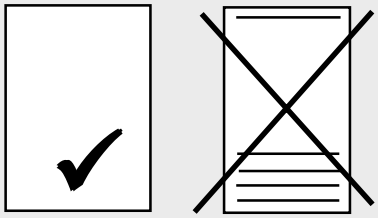


***Note**: Do not squeeze cables when closing the Validator Head.*

Video Level Adjustment (VLA)

The Video-Level-Adjustment (VLA) is used to optimize performance of the Validator. During the VLA process, the Main Optical Sensors and the Side-Looking Sensors are adjusted. A VLA is required

- After a Firmware update, which needs hard boot
- Whenever bank note acceptance is degraded
- After the unit is re-configurated to accept a different size currency
- After preventive maintenance
- After the Validator is disassembled for repair

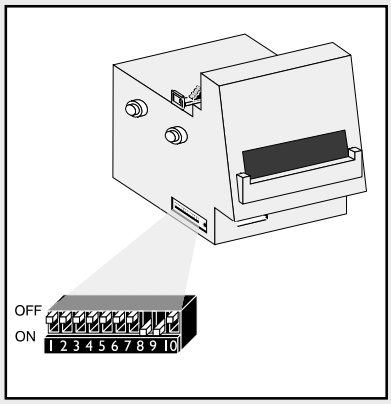


***Note**: The VLA card for the ARGUS G3 is a blank sheet of coated paper (GPT PN 300E0005 / 70mm or GPT PN 300E0019 / 85mm). Do not use VLA cards for the GPT G2 unit (with short instuction printed on the card) or other cards.*

***Note**: Do not use damaged or soiled VLA cards for this test. Please ask Atronic Technical Service to get a new matching VLA card.*

VLA procedure

***Note**: If a software update needs a hard boot, perform this procedure **directly** after software upload.*



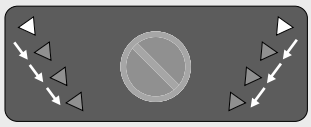
1. Power down the Validator.
2. Set DIP-switch 8 & 9 to the "ON" (down) position.
3. Power up the Validator.
4. Wait approx. 5 seconds for Side-Looking Sensors (SLS) to readjust. The Status LED will illuminate and remain on when SLS adjustment is completed.
5. Insert the VLA card. The unit will draw the paper into the currency channel and step it back out.
6. Power down the Validator while leaving the DIP-switches to "ON" position.
7. Set DIP-switch 8 & 9 to the "OFF" (up) position.
8. Power up the Validator. The Validator now performs a hard boot. VLA procedure is now completed and the acceptor is ready for use.

***Note**: Should a problem occur during the adjustment, the Status LED will blink 3 times repeatedly.*

Bezel LED displays at normal operation

Idle State:
Validator is operational and ready to accept a bill.

- Each pair of green LEDs sequentially flash at 4 Hz (Runway lights)
- Red LED is not lit



Accepting State:
A bill is inserted into the bill validator. The unit is checking data to determine if the bill is valid.

- Green LEDs are not lit
- Red LED is not lit

Escrow-, Checking- and Rejecting State:
When the bill validator enters the escrow state, stacking state or the rejecting state.

- All green LEDs are not lit
- The red LED is lit

Bezel LED displays error codes

Error - Malfunction:

1. A bill is inserted in the channel but does not advance into the channel.
2. Stacker is not connected
3. Validator is in Inhibited Mode caused by an inhibit command from the controller
   - Green LEDs are not lit
   - Red LED is lit

Bill jams in the channel:
Middle Sensor is covered - Front Sensor is active

- Fourth row of green LEDs is lit
- Red LED is lit

Bill jams in the channel:
Middle Sensor is covered - Front Sensor is not active

- Green LEDs are not lit
- Red LED is not lit

Stacker is jammed or full:

- Third row of green LEDs is lit
- Red LED is lit

Troubleshooting Chart

Sympton	Possible Causes	Corrective Actions
Currency Validator is not working; bezel LEDs are not lit.	External power (+24 VDC or GND) is not applied to the Currency Validator. Damaged connector and/or pins on the Main Connector.	Verify that +24 VDC and ground are connected to the appropriate pins on the Main Connector. Check for bent, missing or damaged pinson the Main Connector.
At power up, stepper motor turns 5 times and then stops.	Front and/or rear optical sensors are blocked, dirty or damaged.	Clean front and rear optical sensors, and check that sensors are not blocked or physically damaged. Perform VLA.
Bills continually jam in the channel.	Drive belt(s) and/or pressure rollers are dirty, damaged or loose. Foreign object(s) is in the channel.	Clean the exposed drive belts and pressure rollers; check drive belt(s) for damage and for proper tension. Remove foreign objects from the channel; ensure channel is free of all debris.
Stacker malfunctions	Stacker entry slot is blocked by the Pusher Plate. Foreign object jamming drive gears. Stacker may be full.	Check the Stacker´s entry slot for possible damage and/or blockage. Also, check slide guide for damage. Remove foreign object from drive gears. Empty the Stacker.
Bills jam in Stacker.	Dirty bill guides or foreign objects in the Stacker. Stacker may be full.	Clean Bill guides; remove foreign objects. Empty the Stacker.
Currency Validator reports a Stacker jam but bill is not jammed in Stacker.	Pusher Plate sensor is damaged and does not allow Pusher Plate to return to the top-most position.	Replace the Stacker.