

## **IBS/IDS Bill Validator General Information**

### **Features**

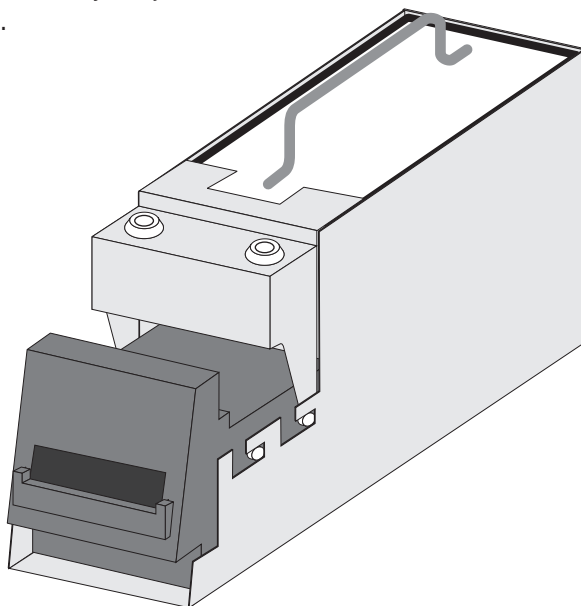
- Light weight, self contained assembly
- Multi-Level High Security process
- Side looking sensors
- LED Illuminating runway lights
- User selectable currency denomination acceptance
- Programmable memory
- Easy opening Clam Shell design

### **Validation Process**

The IBS/IDS validators use four different means of validation:

1. Seven infrared emitter and detector pairs
2. A Super Blue emitter and detector
3. A Magnetic Head sensor
4. A pair of side looking sensors

The light intensity is controlled by the microprocessor and is easily adjusted without additional test equipment.



## Details of Operation

### 1. Validator power up

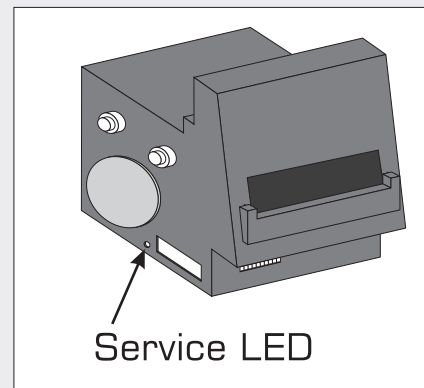
- a. The red LED near the main connector lights up.
- b. The validator stepper motor is initiated and runs for approx. 2 secs.
- c. The stacker motor makes 2 or 3 cycles.
- d. The CPU verifies that a stacker is attached. (If the stacker is missing then the CPU inhibits the unit and sends a message to the machine stating the malfunction.)
- e. The CPU enters an idle mode (waiting for the front reflective sensor to indicate that a bill is being inserted).

### 2. Front sensor activation

- a. Once a bill has past the reflective optic, the validator starts the stepper motor and draws the bill into the channel.
- b. The bill passes the 7 optical pairs and the Super Blue optic.
- 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. Rejection Process

- a. If a bill is determined to be invalid, the CPU will start the stepper motor in the reverse direction and drive the bill to the front of the channel and 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 the idle state after the bill has been removed.



#### **4. 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, the bill enters the stacker and cannot be pulled out.

During the validation process the microprocessor makes decisions about the validity of the bill present. These decisions may be influenced by the selected 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

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

### Setup

The IBS/IDS bill validators use two different protocols. These protocols are V1 and V2. Each one is setup differently in the Atronic game.

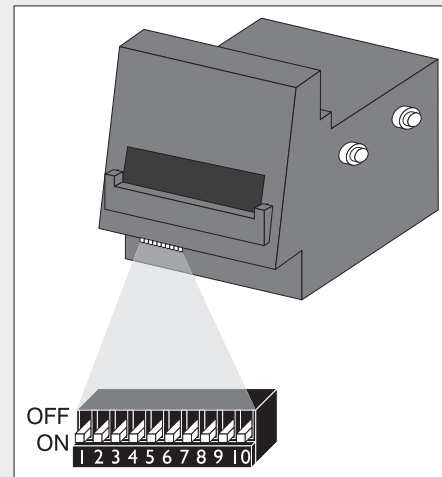
#### Protocol V1

The V1 protocol is the IBS/IDS equivalent of the IVO2 protocol. The validator uses a 10 Dip-switch pack to determine how the validator will function. To check how the validator is set, compare the Dip-switch settings with the data sheets.

The standard settings are as follows:

DIP's	1 - 6	Controls which bills are to be accepted
DIP	7	To see the last five bills
DIP	8	Not used
DIP	9	Service switch
DIP	10	Selects V1 protocol.

For normal operation Dip-switches 7,8 and 9 should be in the off position. 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.



## **Protocol V2**

The V2 protocol uses the software information supplied by the Atronic machine to determine how the validator is to be set. Therefore the validator only uses 2 Dip-switches

DIP 7 To see the last five bills  
DIP 9 Service switch

During normal operation all DIP-switches should be in the OFF position. 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.

The protocol can be upgraded by using the RS-232 Demo Kit with a Download Key. (This is obtainable from Atronic: SAP No: 65502019)

## **Validator Testing**

The IBS/IDS validators can be tested using the RS-232 Demo Kit. This kit supplies the necessary inputs needed to test the validator, outside the cabinet of the Atronic machine.

Tests that can be carried out on the validator are:

- a. Optic Settings: The optics are scanned and a read-out of each optic is displayed. A Green and a Yellow are operational and a Red shows a malfunction. If a Black reading is displayed, this means an optic has had a total failure.
- b. Verifying the program number.
- c. Checking the past performance of the validator: This test shows how many bills have been accepted and rejected. It also shows the reason for the rejection.
- d. The validator can also have bills run through it for test purposes.

## Maintenance

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

### Cleaning the IBS/IDS Validator

- Open the "Clam Shell".
- Clean each optic and magnetic head with a cotton swab moistened with isopropyl alcohol.
- Polish each head with a clean and dry cotton swab.
- Remove all foreign material from the rollers and the currency channel.
- Close the "Clam Shell".

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 IBS/IDS validator the optics are recessed and therefore cannot be reached by the Cleaning Card.

### 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.

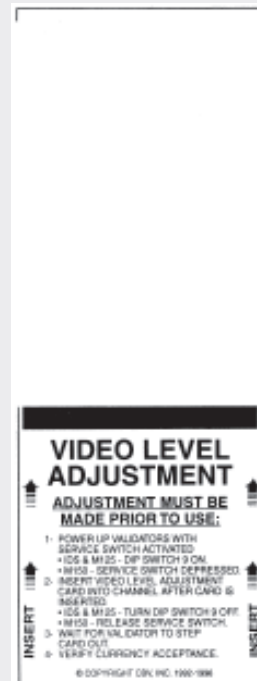
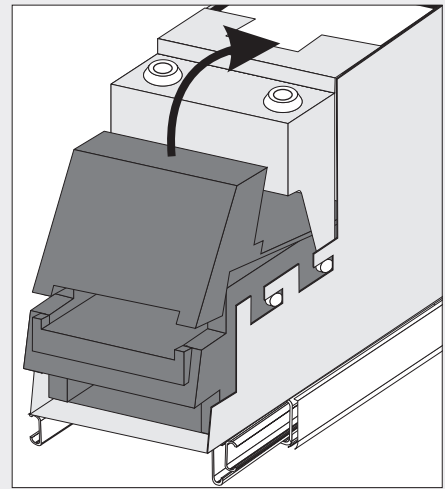
Rear flag: Check for scratches and good spring retraction. (The spring should retract quickly and freely with a clicking sound)

Optical components: Check for debris, scratches and that the optics are centered in there holes.

### Video Level Adjustment (VLA)

To adjust the optics in the validator a VLA must be performed, using a VLA sheet.

- Open the "Clam Shell" on the validator. This removes power to the unit.
- Dip-switch 9 to "ON" position.
- Close "Clam Shell".
- Insert the VLA paper. The unit will draw the paper into the currency channel and step it back out.
- Open "Clam Shell".
- DIP-switch 9 to "OFF" position.
- Close the "Clam Shell".



(reduced scale)

## Last Five Bills

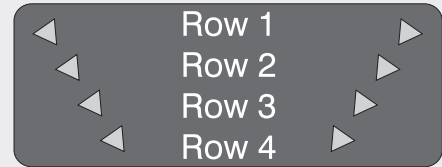
By turning on DIP 7 and the powering up of the bill validator, the last five bills will be displayed on the LED bezel, whereby the last bill will be displayed first. The codes used are in binary code on the bezel. The upper LED's are row 1 and the lower LED's are row 8. These codes are as follows:

Row 1 on	= bill type 1
Row 2 on	= bill type 2
Row 1 & 2 on	= bill type 3
Row 4 on	= bill type 4
Row 4 & 1 on	= bill type 5
Row 4 & 2 on	= bill type 6
Row 4 & 2 & 1 on	= bill type 7
Row 8 on	= bill type 8

## Troubleshooting

The following list of LED status codes that the validator will flash during operation. The LED that flashes is located beside the connector supplying the signal to the validator. The table below reflects the status codes:

<u>LED Pulses</u>	<u>Description</u>
Flashing	Idle state
1	Valid Bill
2	Valid Bill
3	Valid Bill
4	Valid Bill
5	Valid Bill
6	Valid Bill
7	Valid Bill
8	Bill inhibited
9	Bill failed security test
10	N/A
11	Duplicate Correlation
12	Bill fails magnetic test
13	Unable to pass chamber
14	Bill was strung
15	Bill fails optical test
16	All bills inhibited by RS-232
17	Stacker Fault
18	Fails high security



*Note: The bill types are explained on data sheets. (Supplied by GPT)*

