CONLUX®

CV1000

BILL VALIDATOR
Operations Manual

P/N 252659004

PRODUCT OVERVIEW

This section gives a brief overview of the Conlux series CV1000 and explains how to interpret model and serial numbers.

OPERATION OVERVIEW

This section provides details about the various phases in a typical transaction through the CONLUX SERIES CV1000 Bill Validator.

CONFIGURATION

This section explains the use of the Configuration Coupon and Currency to program the CV1000.

INSTALLATION

This section explains the installation of the CV1000 into a vending machine.

MAINTENANCE

This section explains the cleaning of a CV1000.

INTERFACE

This section explains the interface features of the CONLUX series CV1000 Bill Validator.

TROUBLESHOOTING GUIDE

This section outlines the possible failures and methods to resolve them. Typical failures are explained with solutions in a series of troubleshooting charts.

PRODUCT OVERVIEW

PRODUCT FEATURES

The CONLUX SERIES CV1000 Bill Validator will accept U.S. $1, $2, $5, $10 and $20 bills. It may be configured to accept the Conlux Free vend, Conlux Value vend, Conlux low cost Free vend coupons, the Pepsi coupon, and the Aramark $1.00 coupons.

The CONLUX SERIES CV1000 Bill Validator is only available in an upstacker configuration with 300 and 500 bill magazines.
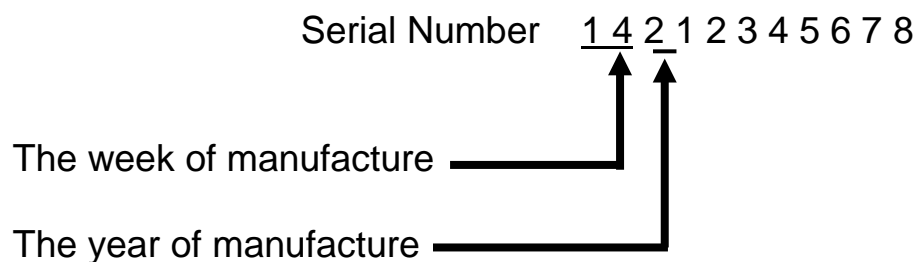
The CONLUX series CV1000 Bill Validator supports the MDB (Multi-Drop Bus) interface at 22 VDC to 45VDC operation.

The CONLUX SERIES CV1000 Bill Validator is configurable with a configuration coupon or currency.

Model Number Breakdown

Part Number   46604   CV1012 has VFM style bezel with setback. Configured for U.S. $1.00

Part Number   46603   CV1012 has VFM style bezel with setback. Configured for U.S. $1.00

Part Number   45604   CV1022 has a compact style bezel with additional setback. Configured for U.S. $1.00s and U.S. $5.00.

Serial Number Configuration

Serial Number   1 4 2 1 2 3 4 5 6 7 8

The week of manufacture

The year of manufacture

Series CV1000 Operation Overview

U.S. currency is validated in the MEI CONLUX Series CV1000 Bill Validator by analyzing the optical characteristics of the bill. A bill validator transaction proceeds through five main steps: bill detection, transport, recognition, validation and storage. When inserted into the Bill Validator, a bill is detected by transmissive start sensors. In response, the control board microprocessor energizes the transport motor. Optical data is read while the bill is transported to the escrow position. The optical data is then analyzed by the Bill Validator. If the bill is valid, the bill will be moved through the stacker mechanism and placed in the magazine assembly. If the bill is determined to be invalid it is rejected by reversing the drive motor.

Bill Detection

As a bill is inserted into the Bill Validator, it breaks the light path between transmissive start sensors and sends a signal to the microprocessor indicating that something has been inserted into the bezel of the Bill Validator. The microprocessor then turns on the drive motor to pull the bill into the escrow position of the Bill Validator.

Bill Transport

The Motor / Gearbox Assembly drives the bill transport belts. Corresponding pinch rollers, located in the LED Housing Assembly, grip the bill and draw it into the Validator.

Bill Recognition

As the bill is transported, sensors scan it optically. The data is transmitted to the microprocessor for analysis.

Bill Validation

Once the optical characteristics are transmitted to the microprocessor, the bill is held in escrow. The data is then analyzed and compared to the criteria for valid currency.

Bill Credit or Return

If the bill is not valid, the drive motor reverses and returns the bill to the customer. If the bill is valid, credit is established allowing the customer to either request vend or request escrow return. Not all systems permit return of escrow. Escrow is dependent on features of the Vending Machine Controller (VMC).

Bill Storage

If the bill is accepted and a vend is requested, the bill is transported to the stacker assembly and credit is established.

The stacker motor / gearbox assembly drives the pusher plate into the magazine assembly via a scissors mechanism. The bill, which is positioned adjacent to the pusher plate, is forced into the magazine for storage. If the magazine is full, the stacker mechanism is unable to complete its cycle. When the microprocessor detects this condition, an out of service signal is sent to the bill validator and controlling device. When the magazine is emptied and the stacker mechanism is able to cycle, the unit comes back into service.

Specifications

Power

The Series CV1000 is available as a 24 VDC MDB unit.

Power ratings for the units are:

- 34VDC at 2.0 amps (MDB mode)

Unpacking the Bill Validator

Unpack the bill validator and immediately inspect it for damage. If the unit is damaged, return it to its original carton along with packing materials.

Notify the delivering carrier of damages and request immediate inspection. Send a letter of intent to file a claim to the delivering carrier within 72 hours from the time of delivery. Send a copy of the letter to the shipper.

Only the consignee (the person or company receiving the bill validator) can file a claim against the carrier for concealed damages.

Retain the original carton and packing materials for future use in shipping or transporting the bill validator.

Warranty

All CONLUX Series CV1000 Bill Validators come with a Two Year Manufacturer's Warranty. Once the unit has been inspected, record the model and serial numbers from the label on the side of the bill Validator. Refer to these numbers when you call MEI, Inc. for service or information. The manufacturer's warranty is based upon the date of manufacture. Parts and labor are included for In Warranty repairs.

The first three digits of the serial number contain the manufacturing date code. (See Serial Number Configuration in this manual.) This code indicates the beginning of the warranty period. The first two digits indicate the week of manufacture; the third digit indicates the year of manufacture. For example: a bill validator with a serial number of 30290033333 was manufactured in the 30th week of 1997 (July 2012).

Configuration

The Series CV1000 is preconfigured during manufacture to accept U.S. 1.00's. The Series CV1000 can be manually configured using an option coupon or by inserting a bill of the desired denomination.

If the Series CV1000 is reprogrammed using a coupon with a different configuration, the new configuration will be the default. The coupon configuration will remain in memory even with the power off.

COUPON CONFIGURATION PROCEDURE
FOR CONLUX SERIES CV1000 BILL VALIDATOR

1)   Carefully copy the coupon from the Operations Guide. Make
        copies of the coupon with a standard, carbon-based, non-color copier.
        The copies of the coupon must be the size of a U.S. $1 dollar bill.

2)   Fill out the coupon using a #2 pencil to fill in the blocks for desired options.
        For correct operation, all 3 sections must be completed. Fill in only one block
        per line. **Do not mark anywhere else or on the back of the coupon.**

        Complete section 1 to enable desired bill denominations. Enable 1 or 2
        direction face up, or 4 way acceptance (which allows acceptance in all
        directions).

        Complete section 2 to enable desired bill denominations. Fill in one block
        for each denomination. Be sure to mark all the denominations.

                Off will reject bills of the selected denomination.

                Accept will accept bills of the selected denomination.

        Section 3 - Not Applicable

        Section 4 - Not Applicable

        Complete section 5 to control the Bezel Lights. **Flashing** or constantly **ON** may
        be selected.

3)   Locate the blue configuration button on the back of the unit. Depress the button
        once to enter programming mode. The red LED Status light will flash rapidly.
        Depressing the button again will exit the mode.

4)   Insert the coupon face up and verify settings were accepted.

        ACCEPTED: The **c**oupon is returned immediately and the LED and the green
                       arrows on the front of the bill validator flash **10** times when the
                       coupon is pulled out.

        REJECTED: The coupon is returned after ten seconds. The red LED and the
                       green arrows on the front of the bill validator flash the **number of
                       times** corresponding to the section improperly filled out.
                        Example: Two flashes for improper section two.

Bill Configuration

An alternative to using the programming coupon to program a CV1000 to accept or reject a particular denomination of currency:

Press the Blue Configuration Button on the back of the CV1000 Validator. The red LED status light, next to the Blue Configuration button, will switch from steady ON to RAPIDLY FLASHING.

Insert a bill of the denomination you wish to enable or disable. The bill will be returned to you. If it is enabled, the red LED status light and the green arrows on the front of the bill validator will flash **10** times.

If the bill is already enabled, it will be disabled, it will be returned to you and the red LED status light and the green arrows will flash **3** times. Repeat the process to return to the former setting.

> **DO NOT LEAVE THE MACHINE UNTIL THE STATUS LED HAS RETURNED TO STEADY ON.**

Installation

The Series CV1000 has been designed for ease of mounting onto existing studs provided by Original Equipment Manufacturers (OEMs). Some machines may require brackets or faceplates to mount the unit. Refer to your machine operation manual or contact your distributor/OEM for more model-specific mounting information.

1. Disconnect all power to the machine.

2. Secure the unit to the mounting studs with the appropriate hardware.

3. Connect the interface harnesses from the machine to the unit.

4 – 11/32 nuts

**Bezel Mounting Points Points**

Bezel Mounting
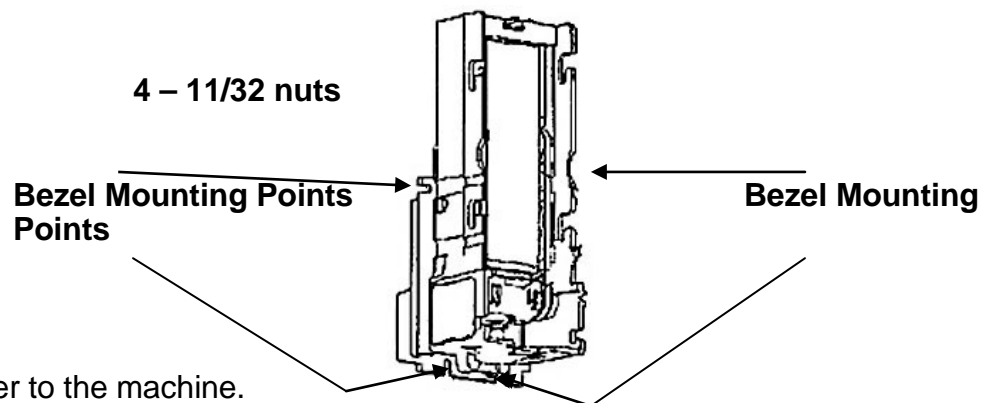
4. Apply power to the machine.

5. Check the Status LED for the "Steady ON" condition. If the red LED is flashing, refer to the Status LED section on page 9.

6. Insert a bill to check acceptance. If enabled, the bill will be accepted.

7. Make a vend to ensure credit is received and proper change is paid out for the bill.

Maintenance

Cleaning

1. You can clean the bill validator while it is still mounted in the machine.

2. Remove power from the machine.

3. Unlatch the magazine by pushing the blue latch (located on the top of the unit) toward the front of the unit. Unhook and remove the magazine by holding the latch and lifting up and then back on the magazine.

4. Unlatch the LED Housing by lifting up on the metal bar (located below the Status LED).

5. Remove the LED Housing by holding the metal bar up and pulling back on the LED Housing.

6. Clean the bill path with a soft cloth. You may use mild, non-abrasive, non-petroleum based cleaners sprayed on the cloth.
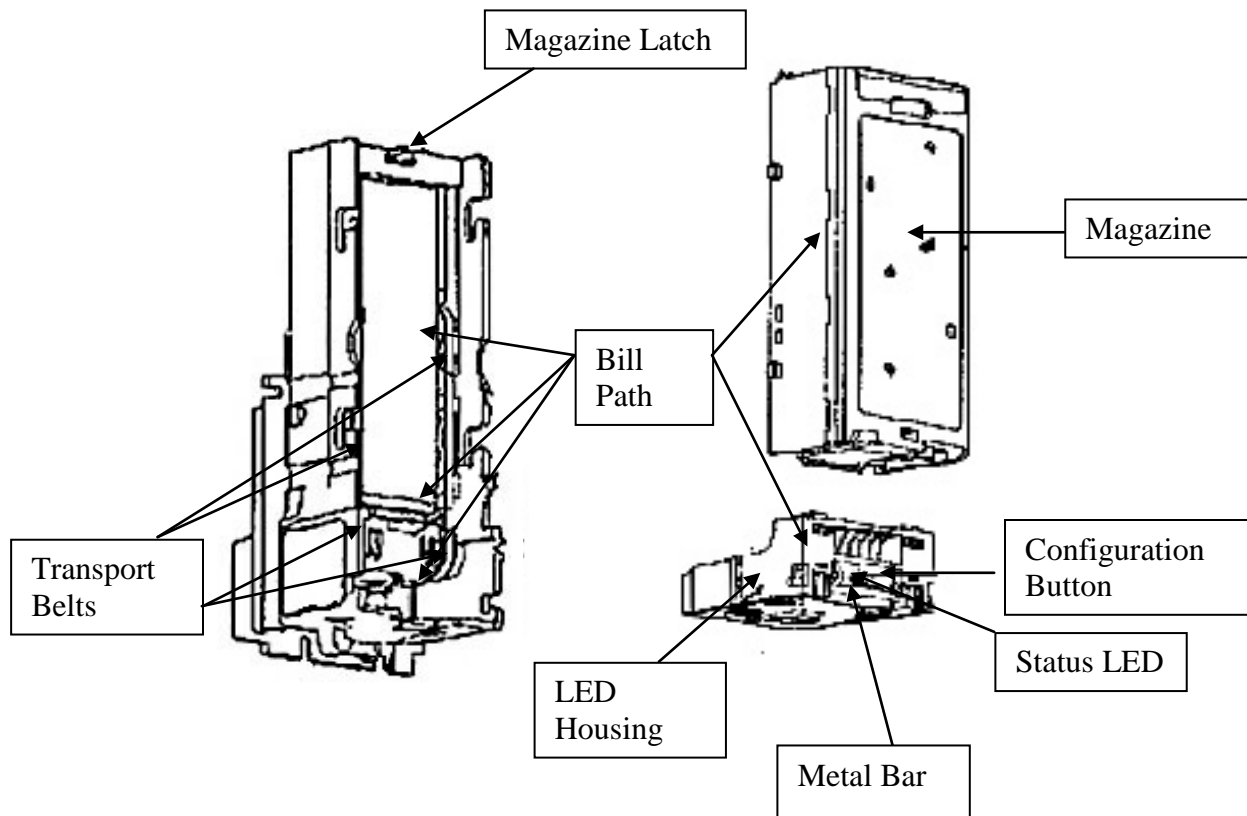
Status LED

A Status LED assists in diagnosing the condition of the Series CV1000. The following is a description of the LED codes, their meanings, and suggested remedial actions.

Signal	Meaning	Solution
LED ON (steady)	Indicates the unit is enabled and ready to accept a bill.	No action necessary.
LED OFF	Indicates that no power has been applied to the unit.	Check to ensure that power is applied.
1 Flash	Indicates that something is obstructing the bill path.	Remove the magazine and LED housing; inspect for foreign material
2 Flashes	Indicates the unit is not enabled.	Verify configuration. Check the coin tube levels in the coin changer. There must be coins in each tube. Note: *Many machines disable the Bill Validator if the machine door is open and the door switch is not activated or if the machine is out of product.*
3 Flashes	Indicates that the bill path needs cleaning for optimum performance.	Remove the magazine and LED housing and follow cleaning instructions to clean the bill path.
4 Flashes	Indicates that something is obstructing the cross channel sensor.	Remove the LED housing and look at the bill path on the housing and inside the unit for foreign material; clean as necessary.
5 Flashes	Indicates that the magazine is removed (the unit will not accept bills without the magazine attached).	Reinstall the magazine.
Continuous Slow	Unit is defective.	Replace the unit.
Continuous Fast	The magazine is full of money.	Remove money from the magazine.

Status LED   Configuration Button
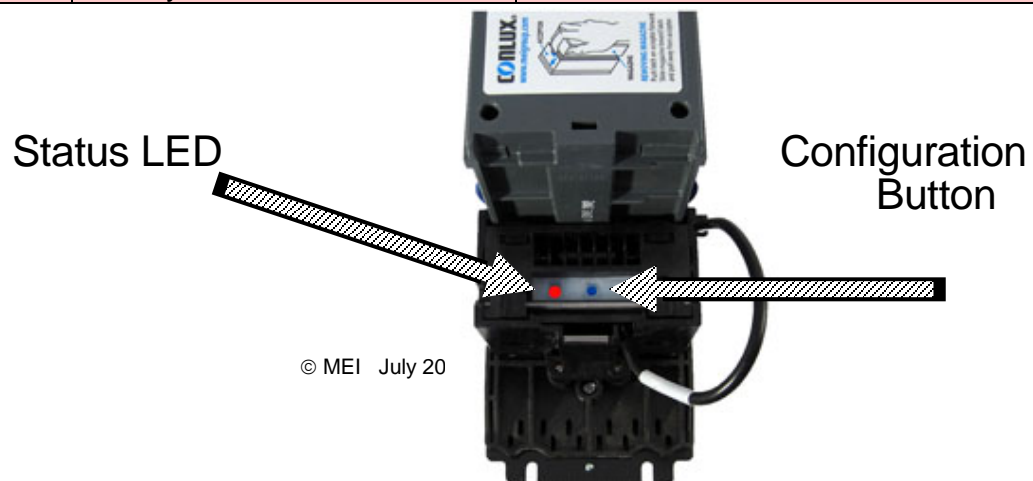
GENERAL INTERFACE

The interface of a Bill Validator refers to the transfer of electronic data to and from the Bill Validator and the controlling device. The controlling device is the associated electronic controller of the vending machine. The signals transferred include input signals to the Bill Validator such as:

  ➢ the control system is ready to accept money
  ➢ the denomination of bills to be accepted
  ➢ whether or not bills should be returned from escrow

Output from the Bill Validator to the control device includes signals that the bill has been accepted and the value of the credit issued.
The CONLUX series CV1000 Bill Validator operates only with the Multi-Drop Bus (MDB) Interface.

Multi-Drop Bus

The Multi-Drop Bus uses a daisy chained five wire interface that includes power and bi-directional communication between the Vending Machine Control Board (VMC) and a number of peripherals. The Bill Validator is one of those peripherals. Coin Mechs, debit card readers, audit devices, etc. are examples of other peripherals. Electrically, the VMC supplies DC power to each peripheral using two wires and communication signaling to each peripheral using three wires.

MDB communications uses an optically isolated 9600 baud, bi-directional serial interface with the Vending Machine Control board as the master and the Bill Validator and others as slaves. The VMC communicates to the peripherals using a half duplex polling type protocol. Each peripheral (up to 32) is assigned a unique address, defined commands, and defined response data. During operation, the VMC polls each of the peripherals for some type of activity and then interrogates that peripheral with various commands to further control it.

TROUBLESHOOTING GUIDE

CONDITION NOTED	POSSIBLE CAUSE	ACTION
	SYMPTOM: BILL VALIDATOR WILL NOT CALIBRATE	
Calibration paper is not pulled in by Validator	Bill validator not in calibration mode.	Confirm that the bill validator is in calibration mode.
Bill Validator does not calibrate	Calibration procedure not followed correctly.	Restart procedure strictly following procedures.
Bill Validator does not calibrate	Defective Sensor or LED board	Replace defective PCB
	SYMPTOM: WON'T COMMUNICATE IN MDB MODE	
Red LED on the back of the unit flashes twice in MDB mode.	Unit may have an blown MDB interface line	Replace main control board
	SYMPTOM: NO MOTOR ACTION, WHEN BILL IS PRESENTED	
Normal Power-up Sequence	Control, LED, or the Sensor PCB, is Defective	Replace control PCB
At Power-up the validator motor fails to run	Defective Control PCB	Replace defective control PCB
At power-up validator motor fails to run	Defective transport belt	Replace the transport belts if worn, stretched or broken.
	SYMPTOM: NO MOTOR ACTION, WHEN BILL IS PRESENTED	
At power-up validator motor cycles normally but the stacker motor does not cycle fully.	Defective stacker motor gearbox assembly	Replace motor assembly if abnormal operation is noted.
At Power-up the validator motor cycles normally but the stacker motor fails to cycle	Defective motor drive circuitry. No Tach Count is received	Replace control board

CONDITION NOTED	POSSIBLE CAUSE	ACTION
	SYMPTOM: MOTOR TURNS ON - ALL BILLS ARE REJECTED	
Power-up sequence is normal but no bills are accepted	Bill Path contaminated	Clean Bill Path in approved manner
Power-up sequence is normal but no bills are accepted	Transport belt (located inside stacker assembly) is slipping or defective	Replace transport belts if worn, stretched or missing.
Power-up sequence is normal but no bills are accepted	Unit out of calibration	Recalibrate unit using MEI Calibration Kit # 250051028
Power-up sequence is normal but no bills are accepted	Defective Sensor PCB	Replace Sensor PCB
	SYMPTOM: BILL VALIDATOR IS DEAD	
No Power-up Sequence	Defective Power Supply circuit on the main control board	Replace the main control board.
No Power-up Sequence	Defective MDB Harness	Check the DC source, replace MDB harness
No Power-up Sequence	Defective Control PCB	Replace control PCB.

Software Upgrades

Upgrades to the operating software of the Conlux CV1000 may be accomplished by using a BPM-Lite. Follow the instructions that come with the BPM.

Owner's Responsibility

Upon request, owner must show proof of purchase when submitting equipment for service during the warranty period. Owner will assume all freight charges for shipment of equipment to an authorized service center while under warranty, and to and from the service center when outside the warranty period. Owner is responsible for out-of-warranty repair expenses, chargeable at prevailing rates set by authorized service centers. Complete written information must be supplied to the authorized service center for all items returned, including serial and model number, and a description of the malfunction.

MEI, Inc. Responsibility

During the warranty period, MEI, Inc. will repair or replace any parts which fail to function properly because of defects in material or workmanship. MEI, Inc. shall not be liable for any consequential damages as a result of defects in material or workmanship.

Damage due to electrical overload, negligence, accidents, misuse, abuse, vandalism, or an act of God is not covered by MEI, Inc. warranty. Any alteration of the product after manufacture voids the warranty in its entirety.

The product to be repaired under warranty must be delivered to an authorized service center. Repairs or installation at the owner's location are not included in the warranty. During the warranty period, MEI, Inc. will assume freight charges for return of the owner's equipment from the closest authorized service center via UPS or common carrier.

Service

For service information, contact MEI, Inc. or any MEI authorized service center. Parts and labor that are MEI, Inc. responsibility will be provided without charge. Other service is at owner's expense. For service information, or the name of the authorized service center nearest you, Call or e-mail to:

MEI Customer Service   1301 Wilson Drive, West Chester, Pa. 19380
1-800-345-8215

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