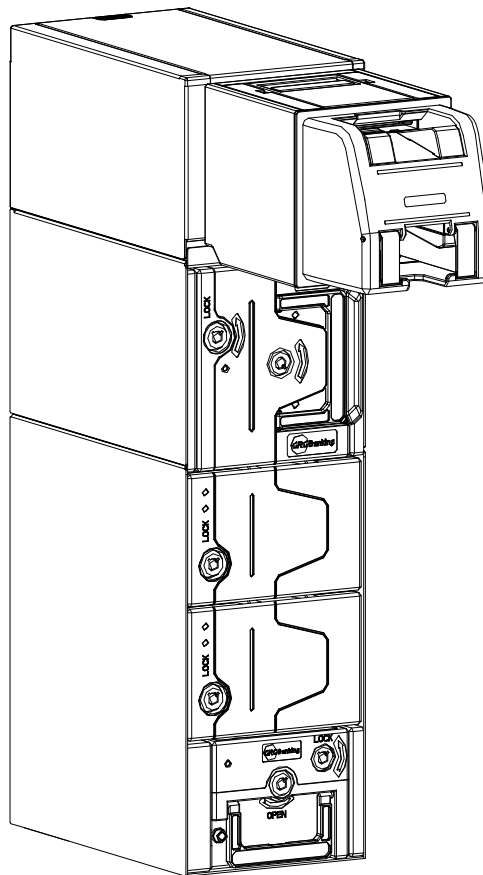


Banknote Recycling Full Stack

Module BR-15M

Technical Manual



1 Overview

The banknote recycling change machine BR-15 whole stack version is a core module that can realize the functions of whole stack identification, deposit, recycling change and automatic banknote replenishment. It has high reliability, ease of use and maintainability. It realizes self-recycling through banknote change, reduces the time spent on banknote replenishment, counting, cash box replacement, etc., reduces the frequency of cash box and banknote replenishment box replacement, reduces dormant cash in automatic equipment, cash exposure risks, statistical cost losses, and downtime for settlement, cash transportation, etc., and improves overall operational efficiency.

Main application occasions: rail transit automatic ticket vending system, bank small recycling machine, parking lot automatic payment and change equipment, retail system automatic fee collection and change equipment, public transportation automatic ticket vending machine and automatic equipment requiring cash recycling and change function, etc.

2 Model and meaning

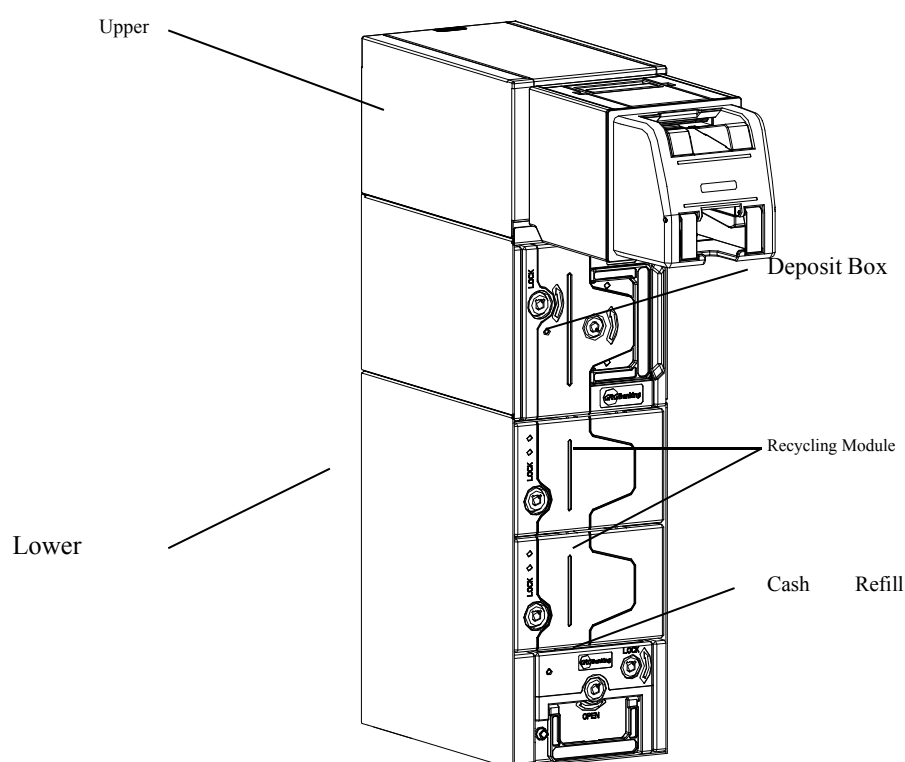
BR-15-41M: banknote recycling change machine, whole stack receiving, equipped with 4 recycling drums and 1 banknote replenishment box.

BR-15-40M: banknote recycling change machine, whole stack receiving, equipped with 4 recycling drums and 0 replenishment boxes.

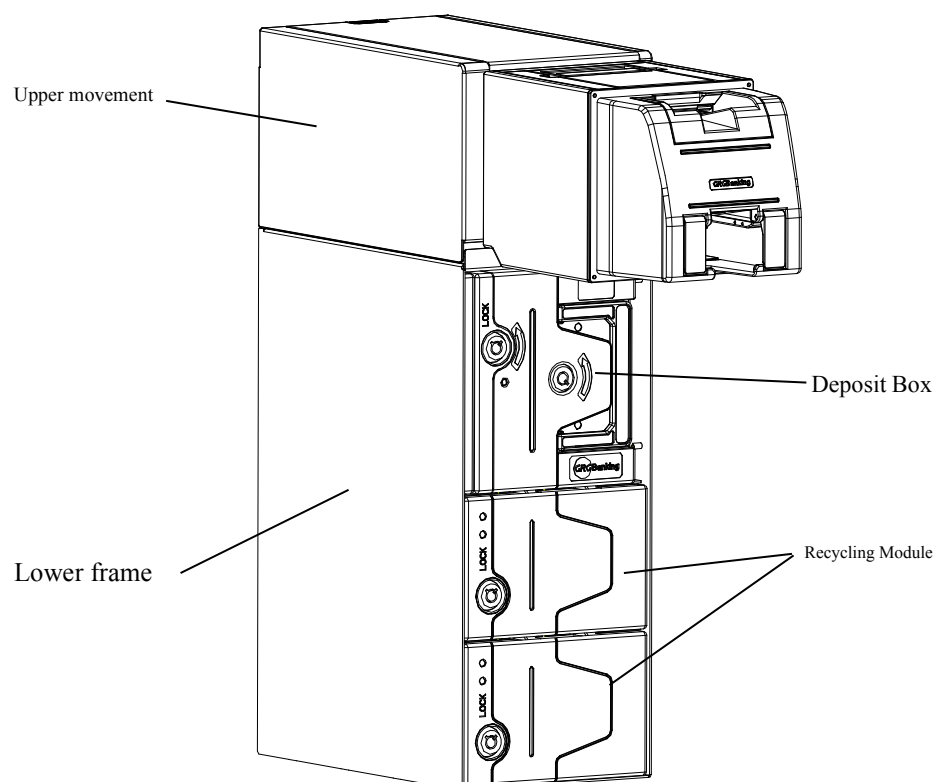
3 Size

3.1 Module composition

The BR-15-41M banknote recycling change machine consists of five parts: the upper movement, the deposit box, the banknote replenishment box, 2 recycling modules, and the lower frame, as shown in the following figure:

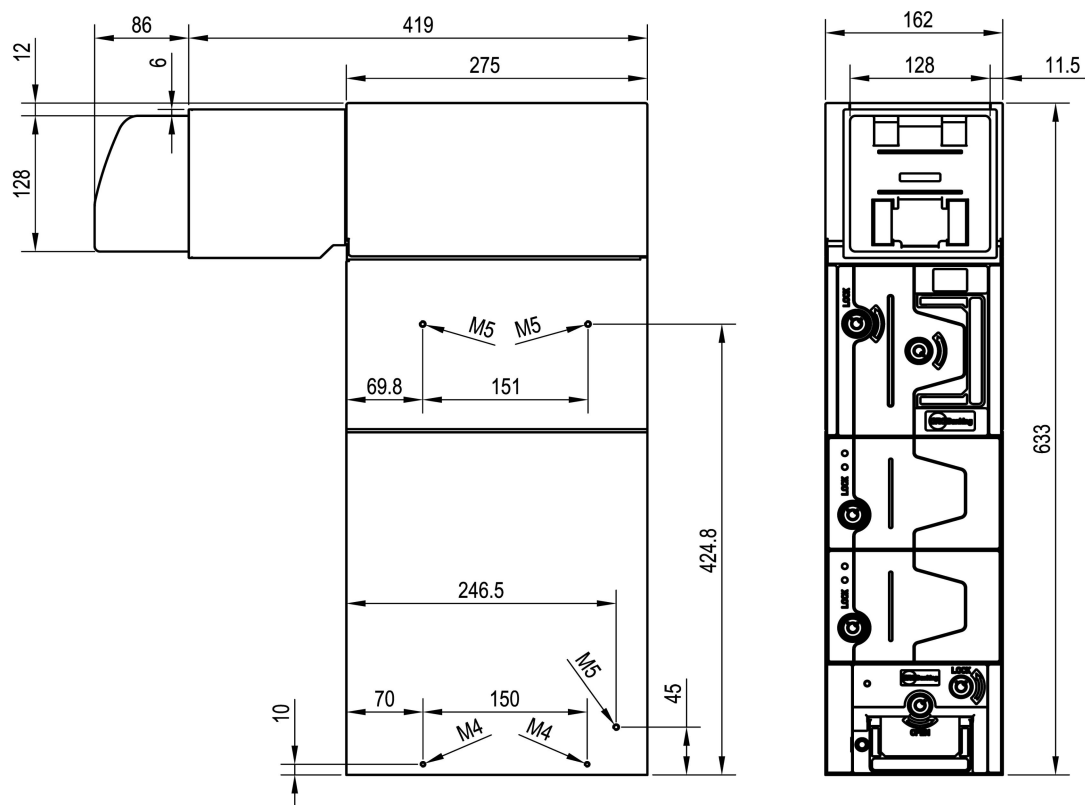


BR-15-40M The banknote recycling change machine consists of four parts: the upper movement, the deposit box, 2 recycling modules, and the lower frame, as shown in the following figure:

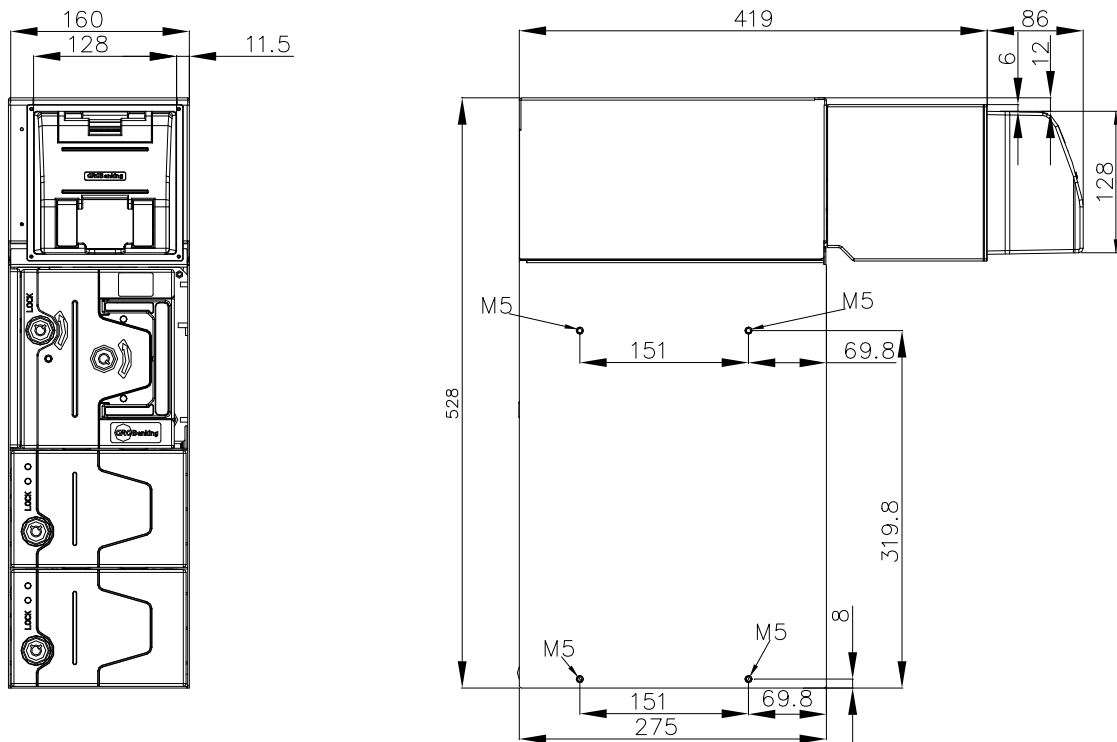


3.2 Dimensions

Dimensions of the BR-15-41M banknote recycling change machine: length 419 × width 162 × height 633 (unit: mm)



Dimensions of the BR-15-40M banknote recycling change machine: length 419 × width 162 × height 528 (unit: mm)



4 Features

- Insert a whole stack of banknotes, up to 20 banknotes can be inserted at one time, supporting 4 directions for fast deposit
- Based on experienced banknote recognition and anti-counterfeiting technology
- Compact and secure international multi-currency banknote acceptance and recognition system
- Supports up to 4 different denomination banknotes recycling, optimized and flexible change solution
- Recycling drum temporary storage technology ensures reliable banknote recycling
- The cash replenishment box can provide a faster, more convenient and safer solution for small bill replenishment
- Reduce the frequency of cash box replacement and reduce the amount of coins used
- Cash boxes and cash replenishment boxes are equipped with electronic IDs for easy automatic identification and management
- Easy to maintain, no tools are needed to quickly troubleshoot card failures on site

5 Features of each module

Upper movement:

- Universal entrance indicator lights for user convenience
- Supports up to 20 banknotes in a stack, convenient and fast
- Supports change of up to 20 banknotes, stacked at the cash outlet
- Ergonomic design for banknote insertion
- Three-line anti-counterfeiting technology, up to 100,000 identification scanning points
- Multi-spectral full-width image scanning (CIS technology) and full-width magnetic signal detection, high-security banknote recognition

Deposit cash box:

- Durable, double lock design (changing the cash box and opening the cash box) and interlocking mechanism for secure cash box
- Electronic identification tag with unique identity
- Independent removable cash box, no electrical connection, high reliability

Cash replenishment box:

- Sturdy and durable, double lock design (replace the cash replenishment box and open the cash replenishment box)
- Electronic identification tag with unique identity
- Independent removable cash replenishment box, no electrical connection, high reliability
- Can be set to automatically distribute banknotes to the recycling drum, and operators can safely load banknotes in the background
- Supports mixed release of multiple denominations of banknotes, with strong scalability

Recycling Module:

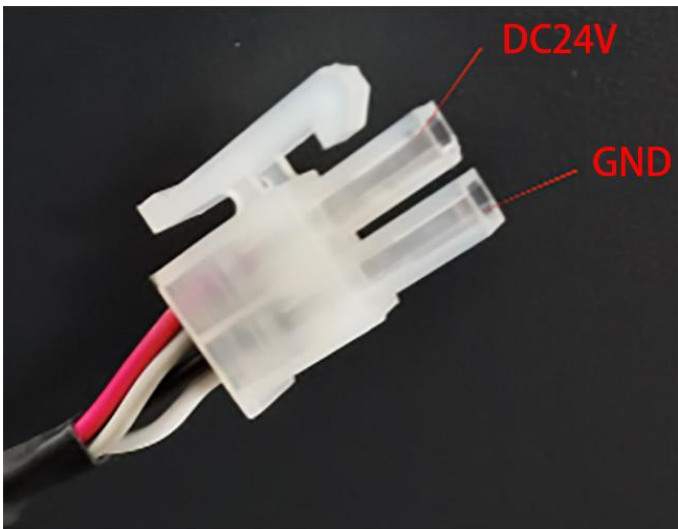
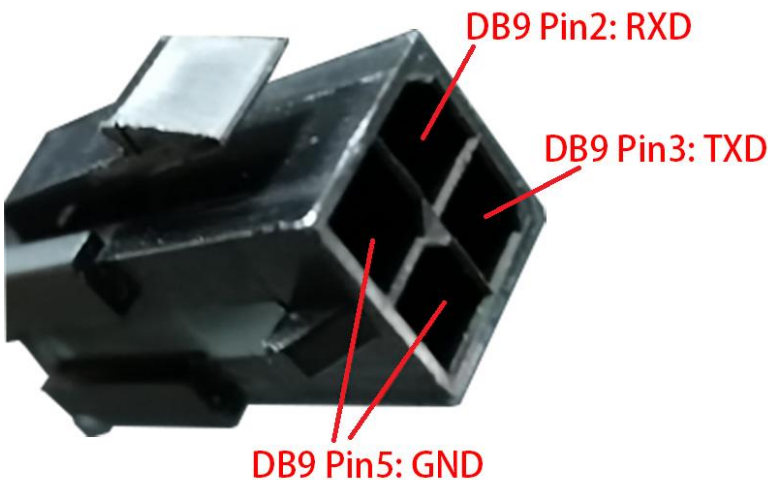
- Supports recycling of up to 4 different denominations of banknotes, up to 260 in total, and monitors the banknote storage status throughout the process
- Last-in, first-out, ensures original currency return; optimized change solution enhances passenger satisfaction
- The denomination can be configured as required through software set
- Reliable drum recycling change technology, smaller space occupation

6 Technical Parameters

6.1 Performance parameters

Item		Performance Specifications
Cash in	Cash input direction	Vertical banknote feeding
	Orientation	No restrictions
Identify	Currency	Support 100 different denominations of banknotes (one or more countries) at the same time
	Material	Paper, plastic-based (polymer)
	Real banknote acceptance rate	≥99%
	Banknote size	Length range: 120~160 mm; Width range: 60~78 mm
Detection Methods	Optical	Full-frame image sensor (CIS technology), no less than 100,000 measurement points per banknote
	Magnetic	Full-width magnetic sensor detection
Speed	Accepting speed	15 sheets about 35 seconds, 1 sheet about 2.5 seconds
	Change speed	The change for a whole stack is about 1.5 seconds for 1 sheet, about 5.9 seconds for 5 sheets, about 11.6 seconds for 10 sheets, and about 17.1 seconds for 15 sheets
	Refill speed	About 2.8 seconds/sheet
Capacity	Register	20 sheets
	Circulating Denomination	4 kinds
	Cycle module capacity	260 sheets (50 sheets 2pcs, 80 sheets 2pcs)
	Deposit Box	1000 sheets ± 50 sheets (length 231mm, width 137mm, height 161mm)
	Cash Refill Box	500 sheets ±50 sheets (length 230mm, width 123mm, height 102mm)
Environment	Operating temperature	0℃~50℃
	Storage temperature	-20℃~60℃
	Humidity	20%RH~90%RH (Non-condensing)
Update	Update method	With online download and upgrade function
Weight	Deposit box (empty box)	2.5kgs
	Cash replenishment box (empty box)	2kgs
	Complete Machine	BR-15-41M: 31.5kg BR-15-40M: 27kg
Electromagnetic compatibility		Comply with relevant national standards GB/T 17626

6.2 Electrical Specifications

Item		Specifications
Electrical Interface	Power supply	+24VDC±10%, +10A
	Movement power	Standby 15W Average 80W
	Plug	2-pin power plug 2-pin power pin
	Wiring relationship	
Communication interface	Communication Protocol	RS232 (USB optional)
	Baud rate	19200 bps
	Inspection method	No verification
	Communication parameters	Data bit: 8 bits Start bit: 1 bit Stop bit: 1 bit
	Wiring relationship	

6.2 Movement reliability technical specifications

(Working environment: room temperature 20°C, humidity 50%RH)

Item	Technical indicators	Remark
Banknote jam rate	Less than 3/100000	More than 70% new, no damage, no stain, no wrinkles
MCBF	300,000 times	Work in a standard working environment and in accordance with standard specifications (see Note 1)
Working life	10 years	Work in a standard working environment and in accordance with standard specifications

Note 1: Does not include coin jams or self-recoverable failures