

**Technical Manual of
BR-15
Banknote Recycling Module**

Document Record

Item	Version	Date	Creation/ Modification	Participants
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Content

DOCUMENT RECORD.....	I
1. GENERAL DESCRIPTION.....	1
2. MODEL AND TERMS.....	1
3. OVERVIEW.....	1
COMPOSITION.....	1
DIMENSIONS.....	2
4. FEATURES.....	2
5. MODULE FEATURES.....	3
UPPER PART.....	3
DEPOSIT CASSETTE.....	3
REPLENISHMENT CASSETTE.....	3
RECYCLING DRUM SET.....	4
6. TECHNICAL PARAMETERS.....	4
TECHNICAL PARAMETERS.....	5
ELECTRICAL SPECIFICATIONS.....	5
RAMS SPECIFICATIONS.....	5

1. General Description

BR-15, the banknotes recycling module is a core processing module with integration of notes validation, deposit, recycling and notes automatic replenishment. It features high reliability and availability and friendly maintenance. Through banknotes recycling change giving, BR-15 reduces the idle cash in the self-service equipment, lower the frequency of the replacement of deposit cassette and replenishment cassette. Through loading with different denominations of notes, it decreases the time consumption for notes replenishment and sorting, thus to raise operation efficiency. The module features high reliability, accessibility and maintainability in reducing cash exposure, calculating cost allowance and settling accounts.

BR-15 is mainly applied in small amount cash transaction service industries, such as the AFC system in mass transit industry, Kiosk with deposit and cash recycling functions in banking industry, self-service equipment in parking lot and self-service payment system in retailing industry.

2. Model and Terms

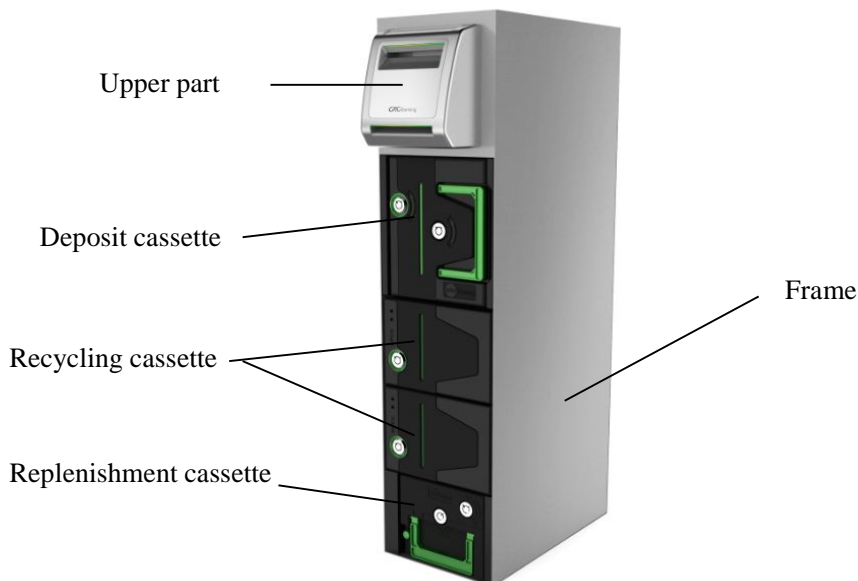
Model number: **BR-15** Single banknote recycling module (front access)

Terms: **BR**——Bill Recycler

3. Overview

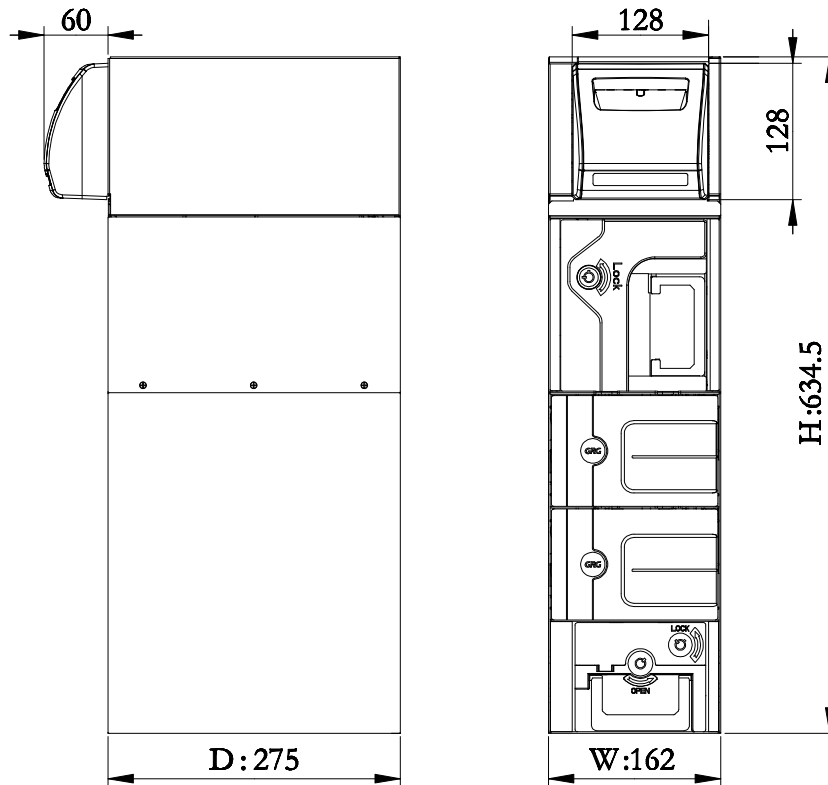
Composition

BR-15 module is constituted by five main parts including the upper part, deposit cassette, replenishment cassette, recycling drums and frame for lower part as shown in the following figure:



Dimensions

275(L)×162(W)×634.5(H) (Unit: mm)



4. Features

- Single banknote acceptance, fast banknote deposit and cash recycling;
- It is based on proven note validation and forgery-proof technology;
- Compact banknote acceptance structure and banknote validation system;
- Banknote recycling in 4 denominations provides more flexible and optimal change giving method;
- Recycling drum design ensures reliable banknotes recycling;
- Replenishment cassette provides faster, safer and more convenient replenishment solution;
- Lower the cassette replacement frequency;
- Cassette attached with electronic ID to facilitate automatic validation and management;
- Maintenance friendly design allows bill jams to be settled with no tools at site.

5. Module Features

Upper Part

- Its entrance indicator facilitates patrons to use;
- Banknotes giving to the patron are up to 20 notes in one transaction with the banknotes of small denomination put on the top;
- Fast banknotes accepting, two banknotes accepting interval is less than 1.5 seconds;
- The banknotes accepting automatic correction device ensures banknotes insertion at any angles;
- Entrance/exit shutter design effectively prevent foreign insertion and manipulation;
- The module frame and transport unit adopt stainless steel to provide more strong and durable structure;
- The industrial class electronic components adapt to bad environment of high/low temperature and high degree of humidity;
- The module is based on supreme anti-counterfeit technology with 100,000 scanning points of banknote surface;
- Multispectral scanning of image (Contact Image Scanning) and detection of magnetic signal on full surfaces of banknote provide more accurate banknote validation result;
- The serial number of banknote can be recorded and tracked for providing proof for financial fraud.

Deposit Cassette

- Hard and durable cassette with double safe locks (fixing lock and lid lock);
- With unique electronic ID;
- Independent replaceable cassette with no electronic appliances connection features high reliability.

Replenishment Cassette

- Hard and durable cassette with double safe locks;
- With unique electronic ID;
- Independent replaceable cassette with no electronic appliances connection features high

reliability;

- Automatic loading banknote to the recycling drums ensures less manipulation and corruption in the process of banknote replenishment.
- Banknote replenishment in different denominations by loading the cassette with mixed denominations.

Recycling Drum Set

- Recycling of up to 260 banknotes in 4 denominations;
- Last-in-First-out, ensure original notes return to patron; Optimal change giving solution provide better user experience;
- The banknote denomination in specific recycling drum can be set through software configuration;
- Recycling drums design takes up less space;
- Intelligent selection of banknotes accepted prevents the old and worn banknote from the recycling process to ensure less bill jams.

6. Technical Parameters

Item		Specification
Notes feeding	Feeding direction	Lengthwise
	Face direction	4 directions
Validation	Currency	Support 100 kinds of different denominations notes (one country or multinational) in the meantime, see Annex
	Material	Paper, plastics base (polymer)
	Genuine note accepting rate	≥99%
	Notes size	Length: 120~180 mm; Width: 60~85 mm
Detection	Optics	Full image CIS with validation scan points up to 100,000
	Magnetics	Full image magnetic signal detection
Speed	Accepting speed	1.5s/note
	Change giving speed	1.8s/1note, 4.8s/5 notes, 7.5s/10notes, 15s/20 notes

	Replenishment speed	2.2s/note
Capacity	Escrow	20 notes
	Recycling drum(4)	260notes (50notes×2 + 80notes×2)
	Deposit cassette	800notes 231 (L)×137 (W)×161(H) mm
	Replenishment cassette	500notes 230 (L)×123 (W)×102(H) mm
Environment	Operation temperature	0℃~50℃
	Storage temperature	-20℃~60℃
	Humidity	20%RH~90%RH (non-condensing)
Upgrade	Upgrading means	Online download and upgrade
Weight	Notes validator	2kg
	Replenishment cassette (empty)	2kg
	Whole set	26kg
Electro-magnetic compatibility		Compliant to International related standards GB/T 17626

Technical Parameters

Electrical Specifications

	Item	Specifications
Electrical interface	Power supply	+24VDC±10%, +10A
	Power consumption	Standby: 15W Average: 80W
	Socket	4-core power socket
	Connector	4-pin power connector
	Pin description	pin1——+GND pin2——GND pin3——+24V pin4——spare
Communication interface	Communication protocol	RS232(USB optional)
	Baud rate	19200 bps
	Inspection method	No inspection
	Communication parameter	Data bit: 8bits Starting bit: 1bit Ending bit: 1bit
	Pin description	Pin3 —— PC-RXD(BR-15 to upper stream) Pin2 —— PC-TXD(upper stream to BR-15) Pin1/Pin4 —— PC-GND(signal earth)

RAMS Specifications

(Working environment: 20℃, 50%RH)

Item	Specifications	Remarks
Note jam rate	Less than 3/100000	70% new or above notes
Mean Time Between Failures (MCBF)	300,000 times	Work in standard environment under working standard
Service Life	10 years	Work in standard environment under working standard

Note: bill jams and failures recovering under no human interference are not included in the failure aforementioned.