



# CashRay 90

Efficient “short edge” sensor technology for the secure validation of banknotes



The CashRay 90 family detects banknotes of nearly all currencies in automatic cash-in equipment and banknote acceptors for self-service terminals.

Advanced optical recognition technology enables reliable validation of banknotes, including authentication and fitness sorting. Five different sensor versions comply with the various market requirements within the Retail, Transport, Financial Services and Banking segments.

The different product versions are interchangeable, since the design and interfaces are standardized. If market requirements change, the necessary adjustments can be made quickly.

All versions fulfill the European Central Bank authenticity (incl. Article 6) guideline, the “F version” (fitness version) additionally fulfils the fitness guideline of ECB.

Standard and customized templates from over 60 currencies, which can be loaded remotely or on-site, enable the global use of the CR 90 family.

More than 60,000 sensors are in use today in a wide range of applications, testifying to the performance and cost effectiveness of the CR 90 sensor family.

## Technical Data

### Design

- > Banknote transport short edge first
- > Banknote processing in any orientation
- > Single- and bundle-note processing
- > Multi-currency capability in one transaction
- > Up to 200 denominations processable with one adaptation template
- > Currency templates: loadable via serial interface in system or remotely
- > Easily adaptable to different currencies

### Processing Speed

- > 0.3 m/sec. – 2.0 m/sec. dependent on sensor version
- > Max. 8 banknotes per second

### Processable Banknote Formats

- > Length: 100 – 185 mm
- > Width: 55 – 95 mm

### Security Functions

- > Optical verification of banknote paper and printing inks in transmission and reflection using different wavelengths
- > Multi-track magnetic sensors for authenticity checks of hard- and soft-magnetic banknote properties
- > Optical UV sensor
- > Inspection of special security features in banknotes

### Guidelines

- > ECB guidelines for authenticity detection and traceability (Art. 6)
- > ECB guidelines for fitness
- > Further guidelines on request

### Traceability of Banknotes

- > PIDSY System (Post IDentification SYstem)

### Interfaces

- > Asynchronous serial interface:  
RS-232C up to 115.2 Kbit/sec.
- > Synchronous serial interface:  
TTL, 2 Mbit/sec.

### Type of Interface

15 Pin High-Density-SUB-D, male connector

### Electrical Ratings

Voltage: 5 V +5% / -3% DC  
Current: ≤ 0.4 A

### Dimensions (L/W/H)

120 mm × 67 mm × 107 mm

### Weight

Approx. 500 g

### Guidelines

CE, UL, others on request

## Areas of Application

- > Ticket Vending Machines
- > Parking Ticket Machines
- > Automatic Till Systems (Self-Check-Out)
- > Kiosk Terminals
- > Self-service Recycling Systems
- > Self-service Deposit Systems
- > Automatic Cash Safes (TCR)

## Overview of the CashRay 90 Family

### CashRay 90

The CashRay 90 is the standard model of the sensor family. It offers high protection against counterfeits. Where quick processing of deposits and payments is required the CashRay 90 is the optimum solution.

### CashRay 90 R (Retail)

Payment systems for retail applications require highly integrated and cost-effective sensor modules. With bi-directional banknote transport and a transport speed of 0.3 – 0.5 m/s, the CashRay 90 R is designed to meet the demands of the retail market.

### CashRay 90 F (Fitness)

This version fulfils the fitness standard of the European Central Bank banknote recycling framework. The CashRay 90 F can evaluate the fitness of circulated banknotes as being degraded or worn-out. Defects, like holes, tears and many more can be recognized and distinguished. Such banknotes will be classified as genuine on the condition that all authentication features are o.k. additionally, these can be marked as unfit.

### CashRay 90 U (USD)

The sensor CashRay 90 U has identical denomination recognition and authenticity checking technology as the standard sensor CashRay 90, but uses enhanced authenticity checking functionality especially for US dollar banknotes.

### CashRay 90 C

This sensor has, apart from optical and magnetical banknote inspection hardware, additional technology to identify covert authenticity features in banknotes. It therefore represents the highest level of counterfeits detection.

