



## CD21-Rev3

# Calypso revision 3 specification compliant transportation dual-interface secure microcontroller

Data brief

## Features

### Standards

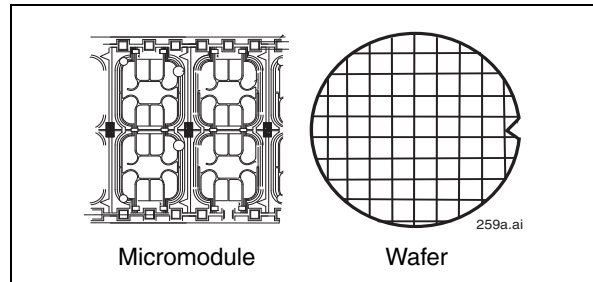
- Calypso compliant with:
  - Portable Object Application Revision 3 specification
  - Card Application Revision 2 specification
  - Calypso revision 1 contactless protocol
  - CD97 specifications
  - CD97-BX specifications
  - CDLight specifications

### Applications

- Automatic fare collection
- Public transportation access
- Access control
- Ticketing payment
- City services and Events
- Leisure parks and stadium
- Corporate card, Student card

### Multi-purpose card

- Single or multiple ticketing applications
- Transportation payment
- Stored value (token purse)
- Loyalty



### ST23YR (8/16bit) MCU Core

- 4, 8 or 18 Kbytes of EEPROM
- Innovatron contactless protocol
- 3V and 5V supply voltage ranges
- Internal CPU clock frequency up to 29 MHz
- Anti-collision and 16-bit CRC features
- ISO/IEC 14443B (Parts 1 to 4) at 106, 212 and 424 kbps
- Complies with ISO/IEC 7816-3 T=0
- Dual or contactless-only configuration
- DES, DESX and TDES capability
- Full transaction duration, including typical terminal processing compliant with public transportation requirements
- Common Criteria EAL5+
- EMVCo™ certification

## Order codes

Part number	Memory	Package
CD21-Rev3-4K	4-Kbyte EEPROM	W40 / D7 / CB4
CD21-Rev3-8K	8-Kbyte EEPROM	
CD21-Rev3-18K	15-Kbyte EEPROM	

### High security features

- Security managed with various access modes: Pin, Session, Always, and Never.
- A cryptographic certificate controls the access to file modifications. The certificate is computed by the reader (using its built-in SAM) and the card during the transaction, using DES, DESX or TDES encryption.
- Calypso automatic recovery mechanism: all data modified in the card during a secure session are either completely done or not done at all.
- Powerful multi-application synchronization capability
- A special mechanism synchronizes modifications between the different applications managed by the card. Each command within the session uses its own secrets or delegates its security to the session security manager.

### Memory organization

- Multi-application card
- Data organized in Files according to ISO/IEC 7816-4
- Tele-ticketing compliant with the EN 1545 standard data model
- The file structure may be chosen among many options (for example, 2 Calypso applications, 1 multi-purpose application with 9 contracts and an eTicket application)
- Complete CDLight and CD97 (BX) emulation possible
- Data is protected by diversified keys (up to 6 keys per directory)

### Description

The CD21-Rev3 is a cost-effective, dual-interface (contact and contactless) secure microcontroller specifically designed for public transport applications, providing a high level of security, high speed transactions and easy capabilities of evolution for transport and multi-service applications.

The CD21-Rev3 is a Calypso Network Association product. The CD21-Rev3 is available with 4, 8 or 18 Kbytes of EEPROM.

## Revision history

**Table 1. Document revision history**

Date	Revision	Changes
21-Sep-2010	1	Initial release.
26-Oct-2010	2	Changed document classification from Smartcard Restricted Distribution to Company Restricted Distribution.
11-Apr-2011	3	Added 4 Kbyte EEPROM device.
12-Jul-2011	4	Changed document classification from Company Restricted Distribution to Public.

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