JMY600 Series IC Card Module

ISO15693 Tags Operation Guide

（Revision 1.00）

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Please read this manual carefully before using. If any problem, please feel free to contact us, we will offer a satisfied answer ASAP.

Contents

1   Overview

This file describes how to operate ISO15693 Lable (As I.CODE SLI an example) and the sequence via using JMY600 Series RFID module. It is suitable for the programmers who are using it to do the development.

Any questions during the programming, please feel free to contact our technical support via jinmuyu@vip.sina.com.

2   Features

2.1   I.CODE SLI RF Interface (ISO/IEC 15693)

· Contactless transmission of data and supply energy (no battery needed)
· Operating distance: Up to 1.5 m (depending on antenna geometry)
· Operating frequency: 13.56 MHz (ISM, world-wide licence free available)
· Fast data transfer: Up to 53 kbit/s
· High data integrity: 16 Bit CRC, framing
· True anticollision
· Electronic Article Surveillance (EAS)
· Application Family Identifier (AFI) supported
· Data Storage Format Identifier (DSFID) □
· Additional fast anticollision read
· Write distance equal to read distance

2.2   EEPROM

· 1024 bits, organised in 32 blocks of 4 byte each
· Data retention of 10 years
· Write endurance 100.000 cycles

2.3   Security

· Unique identifier for each device
· Lock mechanism for each user memory block (write protection)
· Lock mechanism for DSFID, AFI, EAS

3   General Description

The I.CODE SLI IC is a dedicated chip for intelligent label applications like supply chain management as well as baggage and parcel identification in airline business and mail services. This IC is the first member of a product family of smart label ICs based on the ISO standard ISO/IEC 15693.

The I.CODE system offers the possibility of operating labels simultaneously in the field of the reader antenna (Anticollision). It is designed for long range applications.

4   Memory Organization

The 1024 bit EEPROM memory is divided into 32 blocks. A block is the smallest access unit. Each block consists of 4 bytes (1 block = 32 bits). Bit 0 in each byte represents the least significant bit (LSB) and bit 7 the most significant bit (MSB), respectively.

	Byte 0	Byte 1	Byte 2	Byte 3	
Block −4	UID0	UID1	UID2	UID3	Unique Identifier (lower bytes)
Block −3	UID4	UID5	UID6	UID7	Unique Identifier (higher bytes)
Block −2	Internally used	EAS	AFI	DSFID	EAS, AFI, DSFID
Block −1	00	00	00	00	Write Access Conditions
Block 0	x	x	x	x	User Data
Block 1	x	x	x	x	
Block 2	x	x	x	x	
Block 3	x	x	x	x	
Block 4	x	x	x	x	
Block 5	x	x	x	x	
Block 6	x	x	x	x	
Block 7	x	x	x	x	
Block 8	x	x	x	x	
Block 9	x	x	x	x	
Block 10	x	x	x	x	
Block 11	x	x	x	x	
Block 12	x	x	x	x	
Block 13	x	x	x	x	
Block 14	x	x	x	x	
Block 15	x	x	x	x	
Block 16	x	x	x	x	
Block 17	x	x	x	x	
Block 18	x	x	x	x	
Block 19	x	x	x	x	
Block 20	x	x	x	x	
Block 21	x	x	x	x	
Block 22	x	x	x	x	
Block 23	x	x	x	x	
Block 24	x	x	x	x	
Block 25	x	x	x	x	
Block 26	x	x	x	x	
Block 27	x	x	x	x	User Data

The values (in hexadecimal notation) shown in the table above are stored in the EEPROM after the wafer production process. The contents of blocks marked with 'x' in the table are not defined at delivery.

With read and write commands only blocks 0 to 27 can be addressed.

5   Card Operation

5.1   Active Mode

"Automatic detection card" only can be used via UART or RS232C interface. Under this function, the reader module output Lable Serial Number.

Under this working mode, the following information, you can refer to:

Continuous or discontinuous output Lable SNR

HEX or ASCII format output:

As an example: "Continuous output Lable Serial Number" + "HEX format output". We need choose "JCP04 communication protocol" to send the comfigration commands via TransPort.

■ TransPort input: 1E 03

■ Host sends: 03 1E 03 1E

■ Success: 02 1E 1C

AFI ON and Set AFI= 0x08:

■ TransPort input: 1B 08 01

■ Host sends: 04 1B 08 01 16

■ Success: 02 1B 19

SNR output:

■ TransPort Close

■ SSCOM Open, Choose the suitablt Port, Baudrate 19200bps, and HEX display

Then put the I.CODE SLI Lable within the Antenna field, the SNR will output continuously on the SSCOM displayer. The output data:

"0B 5C 33 E3 DB CF 19 00 00 07 E0 6D" This is JCP04 protocol data packet. We choose JCP04 as an example, because of the data packet is less. (0B is Length; 5C is Command; 33 is DSFID; "E3 DB CF 19 00 00 07 E0" is Lable Serial Number; 6D is Checksum).

Each I.CODE SLI Lable Serial Number is unique, that can be used as identification.

Module reset to factory default:

■ TransPort input: 0F 52 45 53 45 54

■ Host sends: 07 0F 52 45 53 45 54 5D

■ Success: 02 0F 0D

After the power on, the Tested Module will be in factory default.

5.2   Passive Mode

During the I.CODE SLI Lable operations, the "Auto-Detecting" function must be prohibited.

Put a new I.CODE SLI Lable into the antenna field, then to do the test via TransPort test tool. Please send the commands like the following sequence.

● I.CODE SLI Inventory:

Find a card in RF effective field. If success, to set the lable as CURRENT Lable.

TransPort input: 5C 00

Host sends: 00 05 00 5C 00 59

Success: 00 0D 01 5C 33 CF 3C 08 17 00 01 04 E0 6A

- **I.CODE SLI Stay Quiet:**

   Set the CURRENT Lable stay quiet.

   TransPort input: 5D

   Host sends: 00 04 00 5D 59

   Success: 00 04 01 5D 58

- **I.CODE SLI Reset to Ready:**

   Set a stay quiet Lable reset to ready.

   TransPort input: 5F CF 3C 08 17 00 01 04 E0

   Host sends: 00 0C 00 5F CF 3C 08 17 00 01 04 E0 5A

   Success: 00 04 01 5F 5A

- **I.CODE SLI Read Blocks:**

   StartBlock: 0x00, BlockNumbers: 0x02

   TransPort input: 54 00 02

   Host sends: 00 06 00 54 00 02 50

   Success: 00 0C 01 54 00 00 00 00 11 11 11 11 59

- **I.CODE SLI Write Blocks:**

   StartBlock: 0x00, BlockNumbers: 0x02, Data: 0x22222222 and 0x33333333

   TransPort input: 55 00 02 22222222 33333333

   Host sends: 00 0E 00 55 00 02 22 22 22 22 33 33 33 33 59

   Success: 00 04 01 55 50

- **I.CODE SLI Read Blocks:**

   StartBlock: 0x00, BlockNumbers: 0x02

   TransPort input: 54 00 02

   Host sends: 00 06 00 54 00 02 50

   Success: 00 0C 01 54 22 22 22 22 33 33 33 33 59

- **I.CODE SLI Lock Block:**

   Lock a block of CURRENT Lable. If locked, the locked block data cannot be changed.

   TransPort input: 56 01

   Host sends: 00 05 00 56 01 52

   Success: 00 04 00 56 52

- **I.CODE SLI Write AFI:**

   Write AFI to CURRENT Lable. If the AFI set, when Inventory, only can detect the quel to AFI Lable.

   TransPort input: 57 08

   Host sends: 00 05 00 57 08 5A

   Success: 00 04 01 57 52

- **I.CODE SLI Lock AFI:**

   Lock AFI of CURRENT Lable. If the AFI locked, it cannot be changed.

   TransPort input: 58

   Host sends: 00 04 00 58 5C

Success: 00 04 01 58 5D

- I.CODE SLI Write DSFID:

  Write DSFID of CURRENT Lable.

  TransPort input: 59 09

  Host sends: 00 05 00 59 09 55

  Success: 00 04 01 59 5C

- I.CODE SLI Lock DSFID:

  Lock DSFID of CURRENT TAG.

  TransPort input: 5A

  Host sends: 00 04 00 5A 5E

  Success: 00 04 01 5A 5F

- I.CODE SLI Get System Information:

  Lock DSFID of CURRENT TAG.

  TransPort input: 5E

  Host sends: 00 04 00 5E 5A

  Success: 00 12 01 5E 0F CF 3C 08 17 00 01 04 E0 09 08 1B 03 01 53

- I.CODE SLI Get Blocks Security:

  Lock DSFID of CURRENT TAG.

  TransPort input: 5B 00 1C

  Host sends: 00 06 00 5B 00 1C 41

  Success: 00 20 01 5B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  00 00 00 00 00 00 7A

  From the above information, we can know the current Lable data blocks are not Locked.