

NFC & MIFARE & ISO14443 & ISO7816 & ISO15693 & ISO18000 IC CARD R/W MODULE

JMY600 Serise IC Card Read/Write Module

ISO18000-3 MODE 3 Card Operation Guide

(Revision 1.04)

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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.



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1 Overview

This article introduces in detail the operation method and sequence of using the JMY600 series card reader module to operate the ISO18000-3 MODE 3 electronic label and the basic card function design. You can quickly grasp the use of the ISO18000-3 MODE 3 electronic label by reading this manual. This manual is intended for programmers using JMY600 series RFID modules. We also have example codes for communication protocols, which can be found on Jinmuyu's website. If you still have any problems in writing the program, please feel free to contact our technical support, or send an email to: jinmuyu@vip.sina.com and we will give you a satisfied answer.

2 Features

- Low cost tag
- User storage with multiple capacities
- Label storage space can be set by permissions
- 96-bit tag identifier (TID), including 48-bit unique serial number
- With anti-collision mechanism, support multi-card operation
- Data retention period is 10 years, can be rewritten 100,000 times, read unlimited times
- Working temperature: -20°C~50°C (humidity 90%)
- Working frequency: 13.56MHZ
- Communication rate: 106Kbit/s
- R&W distance: high-power dedicated reader: maximum 1.5 meters; greater than 10 cm on the JMY600 series

3 General Description

The ISO18000-3 mode 3 electronic label is designed for logistics management, document tracking, laundry automation, casino chips and other scenarios. The 96-byte TID has a very large usable range. The label packaging is diverse and the price is low.

Tag advantages: high sensitivity, long reading distance, advanced anti-collision function, highest recognition speed (up to 800tags/s), and reliable and powerful RFID technology, suitable for use in noisy and dense tag environments.

4 Memory Organisation

The card storage structure is divided into 4 banks (Reserved Memory, UII Memory, TID Memory, and User Memory). Each bank is composed of blocks, and the block storage size is 16 bits. See the



table below for details.

Bank Num:	Bank name	Address	Explanation
11 _b	User
		00h~0Fh	Word 0 of Block 0
10 _b	TID
		10h~1Fh	TID[15:0]
		00h~0Fh	TID[31:16]
01 _b	UII
		220h~22Fh	Optional XPC_W2[15:0]
		210h~21Fh	Mandatory XPC_W1[15:0]
	
			UII[15:0]
	
		20h~2Fh	UII[N:N-15]
		10h~1Fh	StoredPC[15:0]
00 _b	RESERVED	00h~0Fh	StoredCRC-16[15:0]
	
		30h~3Fh	Access Passwd[15:0]
		20h~2Fh	Access Passwd[31:16]
		10h~1Fh	Kill Passwd[15:0]
		00h~0Fh	Kill Passwd[31:16]

Note:

The labels of different manufacturers may make different regulations on the size and definition of Bank in the storage structure.

5 Card Operation

5.1 Explanation

The model of the experiment card in this article is ICODE ILT of NXP company, the model is: 2L2S1402, the same series products also have 2L2S1502 and 2L2S1602, can be used for experiment. If you need the manufacturer's Datasheet or sample card, please contact our sales staff.

5.2 Single label operation

Take a new card in the factory default format and place it on the antenna. Use TransPost software to do these experiments. Please send the following commands in order:



- **Inventory:**

Seek card operation, get the card handle, the subsequent instructions need to fill the handle. Note that the value obtained each time is different.

TransPort input: 85 00
Host sends: 00 05 00 85 00 80
Success: 00 07 01 85 00 04 57 D0

- **Read the key:**

Read the card key, address: 00h Bank 04h (Word type 16bits) length starting from 00h address

TransPort input: 85 02 00 00 00 04 04 57
Host sends: 00 0B 00 85 02 00 00 00 04 04 57 DB
Success: 00 0F 01 85 02 00 00 00 00 00 00 00 04 57 DA

- **Write the ACCESS key:**

Write card ACCESS key, address: 00h Bank, 02h length key starting from address 02h

TransPort input: 85 07 00 00 02 02 11 22 33 44 04 57
Host sends: 00 0F 00 85 07 00 00 02 02 11 22 33 44 04 57 9A
Success: 00 07 01 85 07 04 57 D7

- **Read the key:**

Read the card key, address: 00h Bank 04h (Word type 16bits) length starting from 00h address

TransPort input: 85 02 00 00 00 04 04 57
Host sends: 00 0B 00 85 02 00 00 00 04 04 57 DB
Success: 00 0F 01 85 02 00 00 00 00 11 22 33 44 04 57 9E

- **Set ACCESS key read and write permissions:**

TransPort input: 85 05 30 00 20 00 04 57
Host sends: 00 0B 00 85 05 30 00 20 00 04 57 C8
Success: 00 07 01 85 05 04 57 D5

After setting, the ACCESS key can only be read and written after authentication.

- **Re-power on the label**

- **Inventory:**

First, the card search operation.

TransPort input: 85 00
Host sends: 00 05 00 85 00 80
Success: 00 07 01 85 00 EA 3B 52

- **Read the key:**

Read the card key, address: 00h Bank 04h (Word type 16bits) length starting from 00h address



TransPort input: 85 02 00 00 00 04 EA 3B
Host sends: 00 0B 00 85 02 00 00 00 04 EA 3B 59
Success: 00 08 01 7A 02 04 EA 3B A4 (04 means Memory locked)

- Authentication authority:

The DSFID is obtained from the card in the Get system information command.

TransPort input: 85 06 11 22 33 44 EA 3B
Host sends: 00 0B 00 85 06 11 22 33 44 EA 3B 1D
Success: 00 07 01 85 06 EA 3B 54

- Read the key:

Read the card key, address: 00h Bank 04h (Word type 16bits) length starting from 00h address

TransPort input: 85 02 00 00 00 04 EA 3B
Host sends: 00 0B 00 85 02 00 00 00 04 EA 3B 59
Success: 00 0F 01 85 02 00 00 00 00 11 22 33 44 EA 3B 1C

- Cancel ACCESS key read and write permissions:

TransPort input: 85 05 30 00 00 00 EA 3B
Host sends: 00 0B 00 85 05 30 00 00 00 EA 3B 6A
Success: 00 07 01 85 05 EA 3B 57

- Recovery key:

TransPort input: 85 07 00 00 02 02 00 00 00 00 EA 3B
Host sends: 00 0F 00 85 07 00 00 02 02 00 00 00 00 EA 3B 5C
Success: 00 07 01 85 07 EA 3B 55

5.3 Multi-label operation

Take multiple new cards in the factory default format and place them on the antenna. Use TransPost software for testing. Please send the following commands in order:

5.3.1 Find and operate single tags in multiple tags

TransPort input: 85 01 01
Host sends: 00 06 00 85 01 01 83
Success: 00 07 01 85 01 6F 74 99

The following test can be according to section 5.1



5.3.2 Simultaneous operation of multiple tags

- Get the TID of all tags:

Note: After the instruction is executed, the label needs to be powered on again to execute the instruction again.

TransPort input: 85 0A 02

Host sends: 00 06 00 85 0A 02 8B

Success: 00 3A 01 85 0A 04 0C 0C 0C 0C 00 00 00 00 00 00 40 00 FA B1 58 92 00 00 00 00 00 00 40 00 FA B1 D0 88 00 00 00 00 00 00 40 00 FA B1 F5 23 00 00 00 00 00 00 40 00 FA B1 4C AB 13

(Example description: 4 tags are found, the TID length of the tag is 0C 0C 0C 0C h, the first tag information 00 00 00 00 00 00 40 00 FA B1 58 92...)

- Get the Handle of the first label

TransPort input: 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 58 92

Host sends: 00 12 00 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 58 92 51

Success: 00 07 01 85 0B E0 E0 88

The following test can be according to section 5.1

- Get the Handle of the second label

TransPort input: 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 D0 88

Host sends: 00 12 00 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 D0 88 C3

Success: 00 07 01 85 0B D5 2F 72

The following test can be according to section 5.1

- Get the Handle of the third label

TransPort input: 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 F5 23

Host sends: 00 12 00 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 F5 23 4D

Success: 00 07 01 85 0B 9C 0F 1B

The following test can be according to section 5.1

- Get the Handle of the fourth label

TransPort input: 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 4C AB

Host sends: 00 12 00 85 0B 0C 00 00 00 00 00 00 40 00 FA B1 4C AB 7C

Success: 00 07 01 85 0B 12 3A A0

The following test can be according to section 5.1

Note: When switching tags to operate, you must reacquire the Handle according to the TID.