

**RFID MODULE**

**ISO15693 Reader / Writer**

**SL015M-3**

**User Manual**

**Version 2.0**

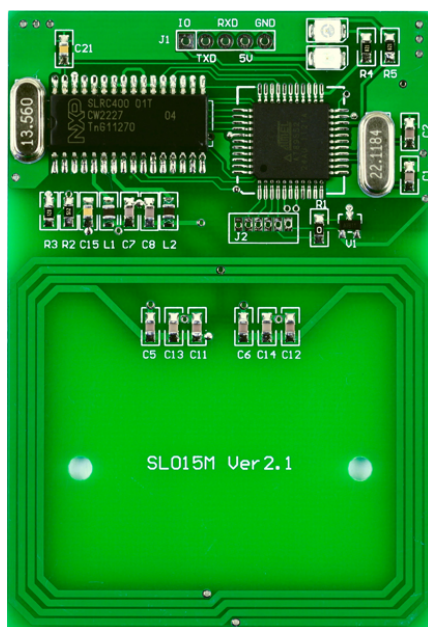
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**StrongLink**

# CONTENS

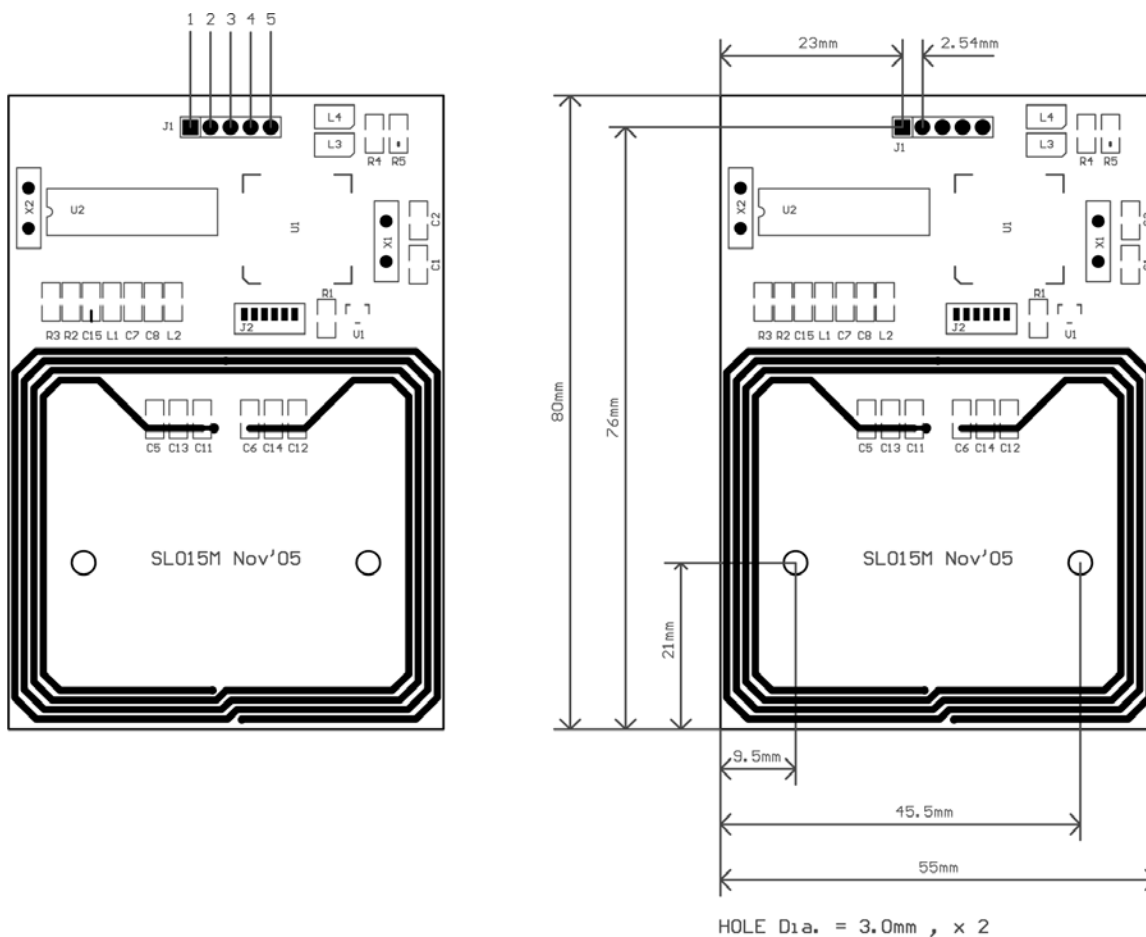
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## 1. MAIN FEATURES



- Tags supported: I.CODE SLI, Tag\_it HF I
- Auto detecting tag
- Integrated antenna
- UART interface, baud rate 9,600 ~ 115,200 bps
- DC4.5V to DC5.5V VDD operating
- Operating distance: Up to 80mm, depending on tag
- Storage temperature: -40 °C ~ +85 °C
- Operating temperature: -20 °C ~ +70 °C
- Dimension: 80 × 55 × 7 mm
- Two LEDs, green led is auto light when tag in detection range, red led is controlled by host
- The OUT pin at low level indicates tag in detective range, and high level indicating tag out

## 2. PINNING INFORMATION



PIN	SYMBOL	TYPE	DESCRIPTION
1	TagSta	Output	Tag detect signal low level indicating tag in detection range high level indicating tag out
2	TXD	Output	Serial output port
3	RXD	Input	Serial input port
4	VCC	PWR	Power Supply
5	GND	PWR	Ground

### 3. BAUD RATE SETTING

R6 & R7 are two 0 ohm resistances assembled on the bottom layer of module, are used for config baud rate as follows sheet

	R6	R7	Baud rate bps
Assembled	no	no	9,600
	yes	no	19,200
	no	yes	57,600
	yes	yes	115,200

## 4. Communication Protocol

### 4-1. Communication setting

The communication protocol is byte oriented. Both sending and receiving bytes are in hexadecimal format. The communication parameters are as follows,

Baud rate: 9,600 ~ 115,200 bps

Data: 8 bits

Stop: 1 bit

Parity: None

Flow control: None

### 4-2. Communication Format

#### Host to Reader:

Preamble	Len	Command	Data	Checksum
----------	-----	---------	------	----------

Preamble: 1 byte equal to 0xBA

Len: 1 byte indicating the number of bytes from Command to Checksum

Command: 1 byte Command code, see Table 3

Data: Variable length depends on the command type

Checksum: 1 byte XOR of all the bytes from Preamble to Data

#### Reader to Host:

Preamble	Len	Command	Status	Data	Checksum
----------	-----	---------	--------	------	----------

Preamble: 1 byte equal to 0xBD

Len: 1 byte indicating the number of bytes from Command to Checksum

Command: 1 byte Command code, see Table 3

Status: 1 byte Command status, see Table 4

Data: Variable length depends on the command type.

Checksum: 1 byte XOR of all the bytes from Preamble to Data

**4-3. Command Overview****Table 3**

<b>Command</b>	<b>Description</b>
0x31	Get tag information
0x32	Get block security status
0x33	Read blocks
0x34	Write a data block
0x35	Write AFI
0x36	Write DSFID
0x37	Lock block
0x38	Lock AFI
0x39	Lock DSFID
0x40	Control Red Led
0xFF	Reset

**Status Overview****Table 3**

<b>Status</b>	<b>Description</b>
0x00	Operation success
0x01	No tag
0x04	Read fail
0x05	Write fail
0x06	Unable to read after write
0x07	Read after write error
0xF0	Checksum error
0xF1	Command code error

## 4-4. Command List

### 4-4-1. Get tag information

0xBA	Len	0x31	Checksum
------	-----	------	----------

#### Response:

0xBD	Len	0x31	Status	UID	DSFID	AFI	Type	Checksum
------	-----	------	--------	-----	-------	-----	------	----------

Status: 0x00: Operation succeed

0x01: No tag

0x04: Read fail

0xF0: Checksum error

UID: The Unique Identifier of card, 8 bytes

AFI: The Application Family Identifier, 1byte

DSFID: The Data Storage Format Identifier, 1byte

Type: 0x31: Tag\_it HF I

0x32: I.CODE SLI

### 4-4-2. Get block security status

0xBA	Len	0x32	block	number	Checksum
------	-----	------	-------	--------	----------

block: Start block number

number: Number of blocks to be read

#### Response:

0xBD	Len	0x32	Status	Data	Checksum
------	-----	------	--------	------	----------

Status: 0x00: Operation succeed

0x01: No tag

0x04: Read fail

0xF0: Checksum error

Data: Security status, 1 byte to 1 block

### 4-4-3. Read blocks

0xBA	Len	0x33	block	number	Checksum
------	-----	------	-------	--------	----------

block: Start block number

number: Number of blocks to be read, max 15 blocks

#### Response:

0xBD	Len	0x33	Status	Data	Checksum
------	-----	------	--------	------	----------

Status: 0x00: Operation succeed

0x01: No tag

0x04: Read fail

0xF0: Checksum error

Data: Blocks data returned if operation succeeds, 4 bytes to 1 block

### 4-4-4. Write data to a block

0xBA	Len	0x34	Block	Data	Checksum
------	-----	------	-------	------	----------

Block: The block number to be written, 1 byte.

Data: The data to write, 4 bytes.

**Response:**

0xBD	Len	0x34	Status	Data	Checksum
------	-----	------	--------	------	----------

Status: 0x00: Operation succeed  
 0x01: No tag  
 0x05: Write fail  
 0x06: Unable to read after write  
 0x07: Read after write error  
 0xF0: Checksum error

Data: Block data written if operation succeeds, 4 bytes.

**4-4-5. Write AFI**

0xBA	Len	0x35	Data	Checksum
------	-----	------	------	----------

Data: The AFI data to write, 1 bytes.

**Response:**

0xBD	Len	0x35	Status	Data	Checksum
------	-----	------	--------	------	----------

Status: 0x00: Operation succeed  
 0x01: No tag  
 0x05: Write fail  
 0x06: Unable to read after write  
 0x07: Read after write error  
 0xF0: Checksum error

Data: AFI data written if operation succeeds, 1 bytes.

**4-4-6. Write DSFID**

0xBA	Len	0x36	Data	Checksum
------	-----	------	------	----------

Data: The DSFID data to write, 1 bytes.

**Response:**

0xBD	Len	0x36	Status	Data	Checksum
------	-----	------	--------	------	----------

Status: 0x00: Operation succeed  
 0x01: No tag  
 0x05: Write fail  
 0x06: Unable to read after write  
 0x07: Read after write error  
 0xF0: Checksum error

Data: DSFID data written if operation succeeds, 1 bytes.

**4-4-7. Lock block**

0xBA	Len	0x37	block	Checksum
------	-----	------	-------	----------

Block: The block number to be locked, 1 byte.

**Response:**

0xBD	Len	0x37	Status	Checksum
------	-----	------	--------	----------

Status: 0x00: Operation succeed  
 0x01: No tag  
 0x11: Lock fail  
 0xF0: Checksum error



**4-4-8. Lock AFI**

0xBA	Len	0x38	Checksum
------	-----	------	----------

**Response:**

0xBD	Len	0x38	Status	Checksum
------	-----	------	--------	----------

Status: 0x00: Operation succeed  
 0x01: No tag  
 0x11: Lock fail  
 0xF0: Checksum error

**4-4-9. Lock DSFID**

0xBA	Len	0x39	Checksum
------	-----	------	----------

**Response:**

0xBD	Len	0x39	Status	Checksum
------	-----	------	--------	----------

Status: 0x00: Operation succeed  
 0x01: No tag  
 0x11: Lock fail  
 0xF0: Checksum error

**4-4-10. Control Red Led**

0xBA	Len	0x40	Code	Checksum
------	-----	------	------	----------

Code: 0 command red led turn off , other red led turn on, 1 byte

**Response:**

0xBD	Len	0x40	Status	Checksum
------	-----	------	--------	----------

Status: 0x00: Operation succeed  
 0xF0: Checksum error

**4-4-11. Reset**

0xBA	Len	0xFF	Checksum
------	-----	------	----------

**Response:** None