

# 15693-RW-TTL-PCB1

13.56Mhz ISO15693 reader/writer module with TTL interface

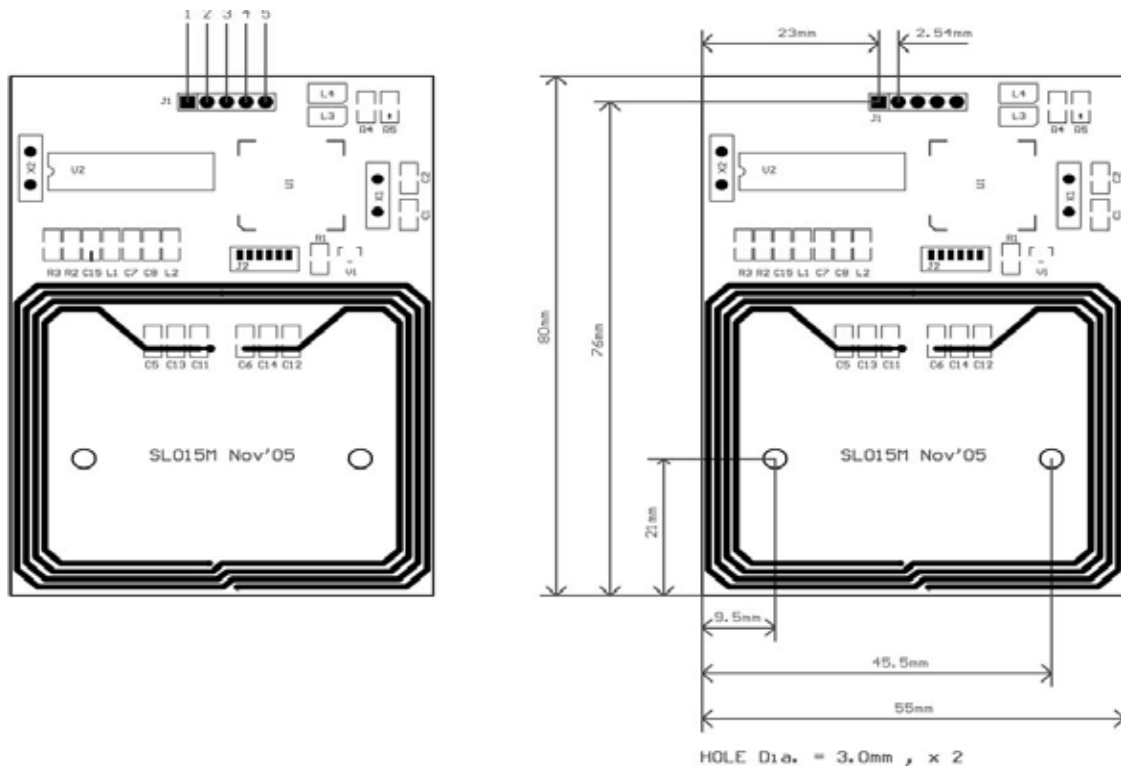
## CONTENT

1. MAIN FEATURES.....	3
2. PINNING INFORMATION.....	4
3. BAUD RATE SETTING.....	5
4. COMMUNICATION PROTOCOL.....	5
4-1. Communication setting.....	5
4-2. Communication Format.....	5
4-3. Command Overview:.....	6
4-4. Command List .....	6
4-4-1. Get tag information	
4-4-2. Get block security status.....	7
4-4-3. Read blocks.....	7
4-4-4. Write data to a block.....	7
4-4-5. Write AFI.....	8
4-4-6. Write DSFID.....	8
4-4-7. Lock block.....	8
4-4-8. Lock AFI.....	9
4-4-9. Lock DSFID.....	9
4-4-10. Control Red Led.....	9
4-4-11. Reset.....	9

## 1. MAIN FEATURES

- Tag supported: I.CODE SLI, Tag\_it
- Auto detecting tag
- Built-in 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 is low level indicating tag in detection 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:

Header	Len	Command	Data	Checksum
--------	-----	---------	------	----------

Header: Communication header, 1 byte.

From host to module: 0xBA.

Len: Byte length counting from Command to Checksum inclusively, 1 byte.

Command: Command, 1 byte.

Data: Data, variable length depends on the command type.

Checksum: XOR result from Header to Data inclusively, 1 byte.

**Reader to Host:**

Header	Len	Command	Status	Data	Checksum
--------	-----	---------	--------	------	----------

Header: Communication header, 1 byte.

From module to host: 0xBD.

Len: Byte length counting from Command to Checksum inclusively, 1 byte.

Command: Command, 1 byte.

Status: Command status, 1 byte

Data: Data, variable length depends on the command type.

Checksum: XOR result from Header to Data inclusively, 1 byte.

**4-3. Command Overview:**

Command	Description
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:**

Status	Description
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
------	-----	------	----------

**Return:**

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

Status: 0x00: Operation success

0x01: No tag

0x04: Read fail

0xF0: Checksum error

UID: The **U**nique **I**dentifier of card, 8 bytes

AFI: The **A**pplication **F**amily **I**dentifier, 1byte

DSFID: The **D**ata **S**torage **F**ormat **I**dentifier, 1byte

Type: 0x31: Tag\_it

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

**Return:**

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

Status: 0x00: Operation success

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 16 blocks

#### Return:

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

Status: 0x00: Operation success

0x01: No tag

0x04: Read fail

0xF0: Checksum error

Data: Blocks data returned if operation is success, 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.

#### Return:

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

Status: 0x00: Operation success

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 is success, 4 bytes.

#### 4-4-5. Write AFI

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

Data: The AFI data to write, 1 bytes.

#### Return:

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

Status: 0x00: Operation success

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 is success, 1 bytes.

#### 4-4-6. Write DSFID

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

Data: The DSFID data to write, 1 bytes.

#### Return:

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

Status: 0x00: Operation success

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 is success, 1 bytes.

#### 4-4-7. Lock block

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

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

**Return:**

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

Status: 0x00: Operation success

0x01: No tag

0x11: Lock fail

0xF0: Checksum error

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

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

**Return:**

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

Status: 0x00: Operation success

0x01: No tag

0x11: Lock fail

0xF0: Checksum error

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

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

**Return:**

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

Status: 0x00: Operation success

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

**Return:**

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

Status: 0x00: Operation success

0xF0: Checksum error

**4-4-11. Reset**

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

**No return**