Product name	ISO14443A reader writer module
Model No.	FRWA-C01U

Materials name	Users manual
Rev.	2013.06

FEC Inc.

FEC Inc.
1414,Higashi,Utsugi-machi,Kanazawa-shi,
Ishikawa 920-0377 Japan
TEL：+81-76-269-8890 ／ FAX：+81-76-269-8897

Compliance statement to FCC

This module complies with part 15 of the FCC rules.
Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning

Changes or modifications not expressly approved by the party responsible for compliance could void the user’ s authority to operate the equipment.

RF exposure compliance

1) To comply with FCC/IC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.
2) This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

1.Requirements to end product

This module must be integrated only by OEM integrators under the following conditions.

(1) OEM integrator has to be aware not provide information to the users regarding how to install or remove this module in the users manual of the end product which integrate this module. Installation by end users is strictly prohibited.

(2) Antenna

OEM integrator shall use this module without any modifications including antenna.
If module integrator uses a unique antenna, the FCC certification is required for the end product.
OEM integrator must make sure that 20cm minimum separation is maintained between users and the antenna.

(3) Co-location.

This module must not be co-located or operated in conjunction with any other antenna or transmitter. The module integrator shall obtain FCC approval for the end product, if the module is used for co-location operation.

(4) Markings

To satisfy FCC/IC exterior labeling requirements, the following text must be placed on the exterior of the end product.

Contains Module FCC ID: 2AAFCFRWA-C01

Any similar wording that expresses the same meaning may be used.

(5) Caution to user for modification

The following caution is expressed on the user’ s instruction manual.

The changes or modifications not expressly approved by the party responsible for compliance could void the user’ s authority to operate the device.

2. General specification

Table- general specification

Item	Contents
model No.	model No. Antenna size ・FRWA-C01U 30（D）× 40（W）× 1.0（H） mm
Module outside dimension	47.0（D）× 47.0（W）× 5.5（H） mm
Module mass	About 14g
Movement frequency	13.56MHz（± 50ppm）
Communication standard	ISO14443A conformity
Corresponding intelligent card, tag	Mifare classic, Mifare ultralight, Jewel and ISO14443A conformity intelligent card, tag
Modulation technique	ASK100%
Transfer rate	106Kbps（Type-A）
Input power supply	DC5V（± 5%）
Consumption electric current	At the time of RF career on : about 110m A（standard） At the time of RF career off : about 20m A（standard）
RF output	Maximum 120mW
Temperature environment	Preservation temperature range : -30 ℃-+80 ℃ Movement temperature range : -10 ℃-+60 ℃ Preservation, movement humidity range : the 90% RH followings （a thing without dew condensation）
Anti-collision	It is possible.
For the control communication	UART Serial 【 communication speed 】 command, variable（Default : 38,400bps） （4,800/9,600/14,400/19,200/28,800/38,400/57,600/115,200bps） 【 Data bit 】 8bit 【 Stop bit 】 1bit 【 Parity bit 】 nothing is done. 【 Flow control 】 nothing is done. 【 mistake detection 】A BCC form by the XOR operation of each data 【 In data bit of the order 】 LSB first base 【 Response form 】 ACK/NAK/ response

3. Interface

3-1. Connector pin assignment

CN-1 : 6pin-ZH connector type SM4

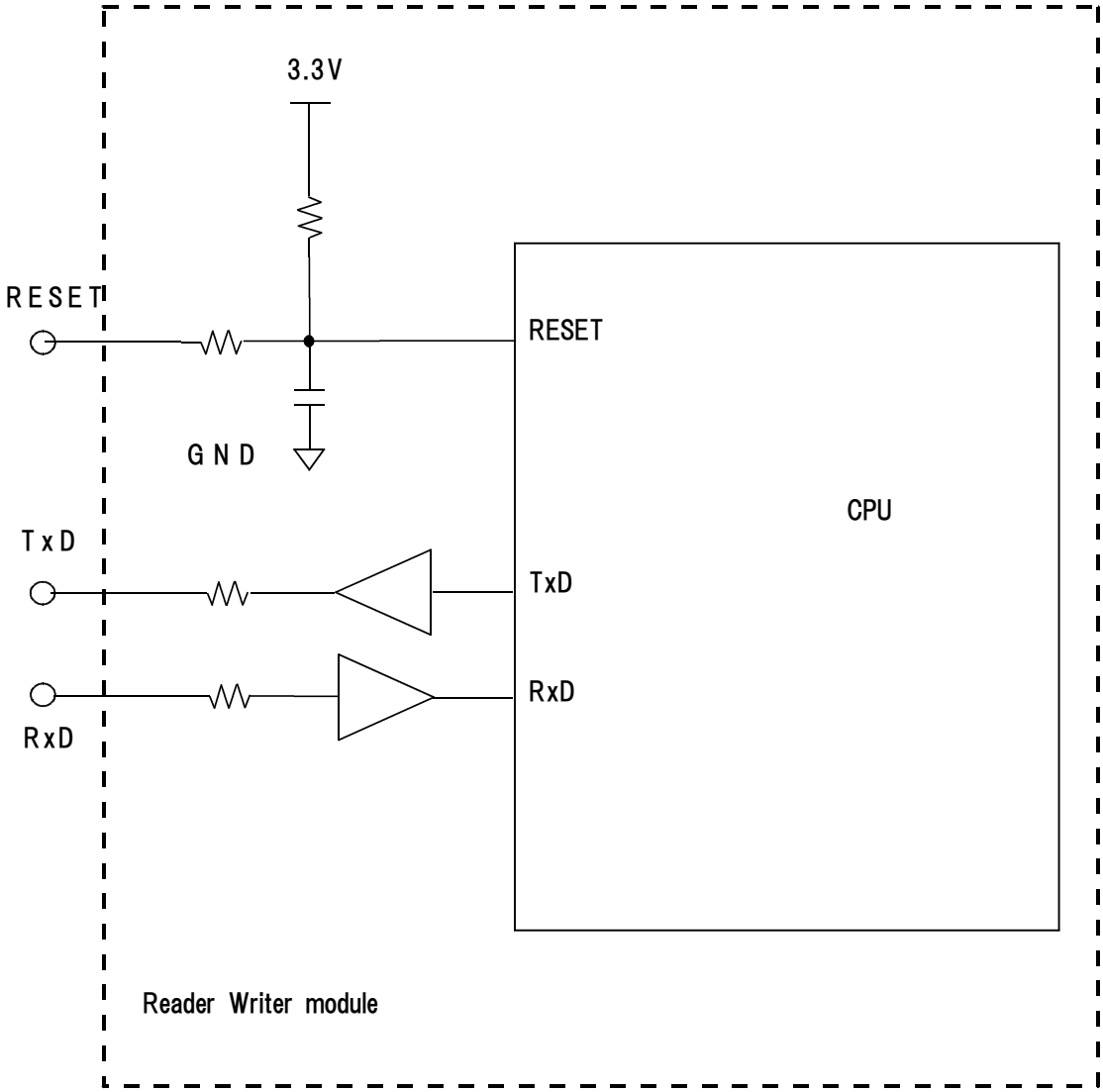
Number	Signal name	I/O	Contents
1	VCC	—	DC5V（± 5%）
2	TXD	OUT	UART serial（5V CMOS） signal output
3	RXD	IN	UART serial（5V CMOS） signal input
4	—	—	Reserved（Prohibition against a connection）
5	RESET	IN	RESET signal input, ‘L’ => RESET
6	GND	—	GND

3-2. For DC

Table- UART serial 5V CMOS I/F

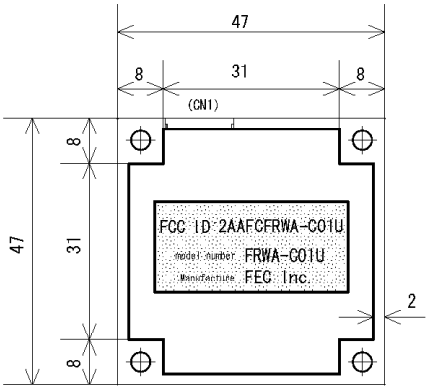
Sign	Item	Minimum	Standard	Maximum	Unit
V_{CC}	Power supply voltage	4.75	5	5.25	V
V_{IH}	‘L' Level input voltage	$0.7V_{CC}$	—	V_{CC}	V
V_{IL}	‘H' Level input voltage	0.0	—	$0.2V_{CC}$	V
I_I	Input leak current VI=VCC or GND	—	—	3-500	μ A
V_{OL}	‘L' Level output voltage at IOL= 0.4m A	—	—	0.7	V
V_{OH}	‘H' Level output voltage at IOH= -1m A	V_{CC}-1.0	—	—	V
I_{CC}	Power supply electric current	30	—	130	mA

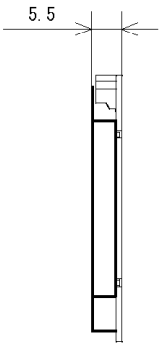
3-3. Interface circuit

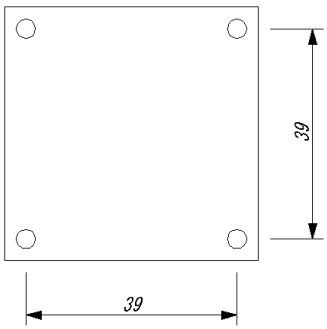


4. Appearance dimension

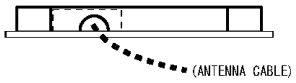
【Reader Writer module】

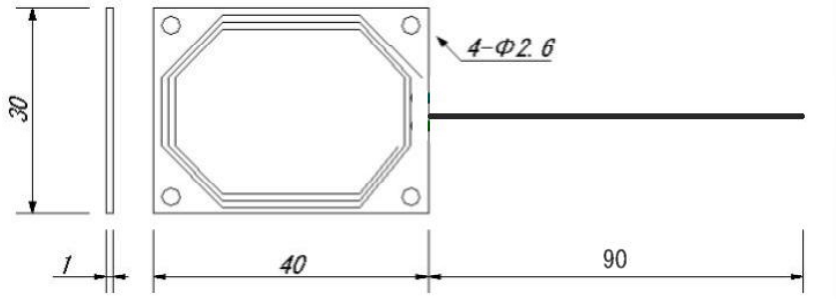






An installation screw is to use M3



(Unit: mm)

【Antenna 30mm×40mm】