

Theory of Operation-Interface Specification  
(Installation manual)  
For IC Card Reader/Writer  
ICM-3405U-A

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2022/3/28

**FUJIFILM Imaging Systems Co., Ltd.**

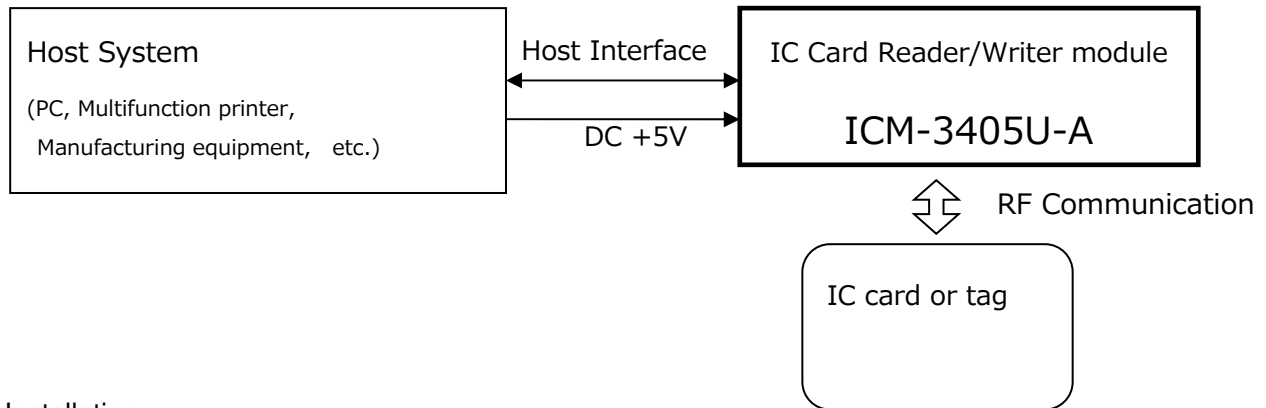
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## 1. Overview

The product is IC Card Reader/Writer module intended to be embedded into other devices.

The product is provided with a USB interface; through control from a host controller, it can transmit and receive data to and from IC card or tag.

The following diagram shows a typical setup for IC Card Reader/Writer module ICM-3405U-A.

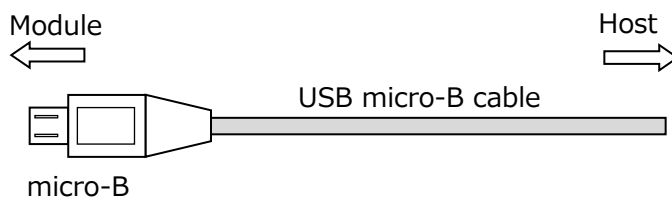


## 2. Installation

### 2-1 Hardware Prerequisites

The following section shows the hardware required for the installation.

- Host system  
For example PC, Multifunction printer and Manufacturing equipment etc. are connected with the IC Card Reader/Writer module.
- Regulated DC +5V power supply (USB Bus-powered)
- Host interface cable  
USB micro-B cable  
Refer to “Host Interface Specifications” about pin assigns.



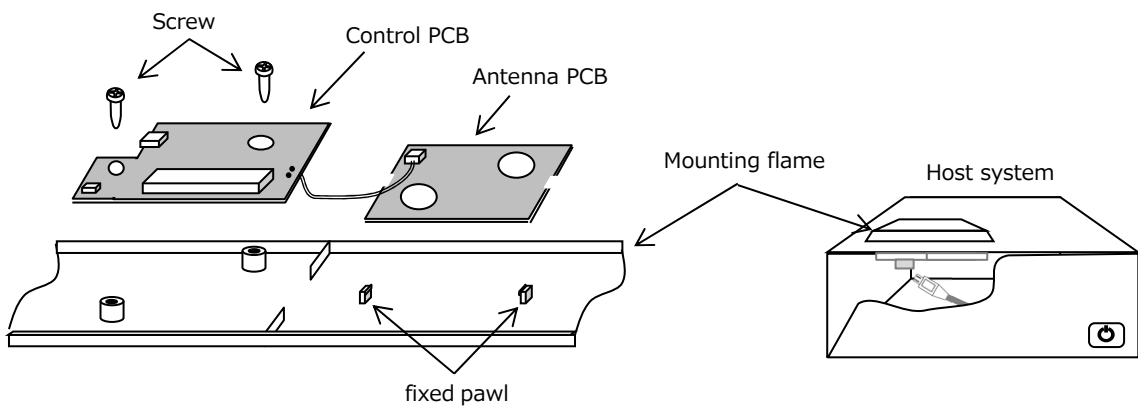
- Mounting frame (Plastic frame)  
Please use nonconductive material for mounting frame.
- Screw (M3 × 1 or 2)  
Please use nonconductive material for screw.

## 2-2 Hardware Installation Steps

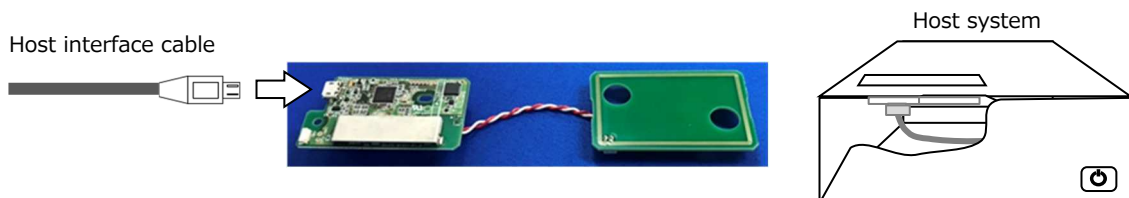
1. Turn OFF the power of a host system before starting the installation.
2. The IC Card Reader/Writer module consists of the Control PCB and the Antenna PCB.



3. Screw the Control PCB and install it on the equipment. It is possible to attach to the device using the mounting hole.
4. Attach the Antenna PCB by fixed pawl.



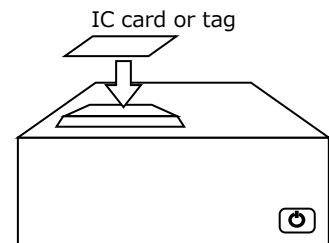
5. Connect the host system to the IC Card Reader/Writer module using the host interface cable.



6. Turn ON the power of a host system.
7. Supply power to The IC Card Reader/Writer module. And it should start working.
8. Application software can communicate to IC Card Reader/Writer module through USB.

## 2-3 RF Communication Steps

1. Turn ON the power of a host system.
2. Supply power to the IC Card Reader/Writer module.
3. Put the IC card or tag on a communication area.
4. Send the configuration command from the host system.
5. Send the read or write operation command.
6. Check the response data.



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### 3. Host Interface Specifications

- 3-1 Interface Universal Serial Bus Specification Revision 2.0
- 3-2 Data Flow Types Controlled Transfer/Bulk Transfer
- 3-3 Transfer rate 12Mbps (Full Speed)
- 3-4 Power Supply USB Bus-powered
- 3-5 Connector USB micro-B
- 3-5 Connector Pin assigns

Pin #	Signal Name	Remarks
1	VBUS	Power(+5V+/-5%)
2	D-	Data signal
3	D+	Data signal
4	Reserved	Not to be connected
5	GND	Ground



### 4. Communication Method

		ISO/IEC 14443 Type A	ISO/IEC 14443 Type B	ISO/IEC 18092	ISO/IEC 15693
1	Modulation type	ASK 100%	ASK 10%	ASK 10%	ASK 10%
2	Data speed	106kbps	106kbps	212kbps 424kbps	26.5kbps
3	Carrier frequency	13.56MHz			