Contactless Smart Card Reader Module
- Uart, SPI, and I2C Interface -
Model : MIC-001

Thank you for purchasing our products.
The contactless smart card reader module is mainly to support the reader and peer2peer function. The small footprint size of the module and facility interface make it easily to integrate into all the platform. The module communicates with a host computer or terminal using a standard Uart, SPI, I2C interface.

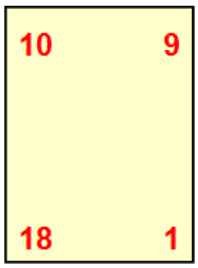
FEATURES
- Hardware-based support for the ISO/IEC 18092, ISO/IEC 21481, ISO/IEC 14443 Type A/B, JIS(X) 6319-4, and ISO 15693 standards
- No active component requirement for antenna or field-power conditioning.
- Individual byte framing
- Hardware-based collision detection and modulation controls
- 256-byte FIFO for either TX or RX paths, configurable to be 128-byte for TX and 128-byte for RX in full-duplex mode
- Reader/Writer (R/W) mode
- Active and Passive Peer (P2P) mode
- Internal low-power oscillator for periodic wake-up and mode switch operation.
- NFC Forum NFC Controller interface (NCI) for host interface.
- ARM Cortex-M0 processor with 128KB ROM and 19KB RAM.
- Integral Low-Drop Out (LDO regulator for direct connection to platform battery.
- Clock sourced from platform reference frequency input for minimum BOM (or external XTAL option).
- Supports UART, SPI, and I2C host interface.
- Multiple low-power modes for complete flexibility and power management.
- Low-power consumption in all modes and support for field-power mode.
- Minimum hardware size and BOM

SPECIFICATIONS

Communication	Supports Uart, SPI, and I2C host interface.
Power Requirements	2.8 or 3.1 Vdc
Power Consumption	Under 250 mA in operating mode
Operating temperature	0 to 55 centigrade
Operating Humidity	20 to 85% (non dew)
Dimensions	26L x 17.5W mm, without antenna board

Pin definition

Pin number	Pin Name	I/O	Description
1	SPI_SCK	I	SPI Clock, generate by host to slave.
2	GND		GND
3	SPI1_MOSI	I	SPI Master Out Slave In, serial data signal from host to module.
4	SPI1_MISO	O	SPI Master In Slave Out, serial data signal from module to host.
5	NFCI CS	I	SPI Chip Select, signal from host to module to enable SPI slave interface block onto bus
6	NFC_IRQ_OUT	O	Host interface mode control pin. Host should power up first and ensure that this line is floating during module power up. After boot up this becomes as output. The host shall ignore this signal for up to 10 ms after power up. SPI interrupt signal from the module that it needs to communicate.
7	Vcc 2.8	P	POWER
8	NFC_IRQ_IN	I	Regulator power on. Low: shut down with all LDOs off (battery-off still functional). High: LDOs are available.
9	Vcc 3.1	P	POWER
10	Vcc 3.1	P	POWER
11	GND		GND
12	Vcc 2.8	P	POWER
13	GND		GND
14	GND		GND
15	GND		GND
16	GND		GND
17	GND		GND
18	GND		GND



NFC module B to B Connector Pin descriptions (Plug)

（Top view）

FCC Information to Users:
This product and it antennas must not be co-located or operated in conjunction with any other antenna or transmitter.

Federal Communication Commission Interference Statement.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Labeling
NFC Module MIC-001 is labeled as below.
FCC ID: A8XMRDB20
The label with FCC ID is to be placed on the module. If FCC ID is not visible when the module is installed into the system, “Contains FCC ID: A8XMRDB20” shall be placed on the outside of final host system.

Caution: Exposure to Radio Frequency Radiation
This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Instructions to OEM Integrators
A User manual provided to the end user must indicate the operating requirements and conditions that must be observed to ensure compliance with the above-mentioned FCC RF Exposure guideline.

If other radio devices are to be integrated with this module, an additional evaluation and FCC submission may be required. Integrators are responsible for such additional evaluation and FCC submission.

Canada-Industry Canada (IC)

This device complies with RSS-210 of Industry Canada.
Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation of this device.

L ‘ utilization de ce dispositif est autorisée seulement aux conditions suivantes :
(1) il ne doit pas produire de brouillage et
(2) l’ utilisateur du dispositif doit étre prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fomctionnement du dispositif.

Labeling
NFC Module “MIC-001” is labeled as below.
IC: 5825B-MRDB20
The label with IC No. is to be placed on the module. If IC No. is not visible when the module is installed into the system, “Contains IC: 5825B-MRDB20” shall be placed on the outside of final host system.

The term “IC” before the equipment certification number only signifies that the Industry Canada technical specifications were met.

Caution: Exposure to Radio Frequency Radiation
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Instructions to OEM Integrators
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