

IC Card/Tag & Magnetic Card Reader Writers

IC Card/Tag & Magnetic Card
Reader Writer



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- Please request for a specification sheet for detailed product data prior to the purchase.
- Before using the product in this catalog, please read "Precautions" and other safety precautions listed in the printed version catalog.

Precautions Before Use

1. General

To obtain optimum performance from this unit, please read the catalog, specification sheet, and operation manual thoroughly prior to installation and use.

2. Safety Precautions

- (1) DO NOT remove the cover as the unit contains sharp blades and injury may result.
- (2) DO NOT install the unit in dusty, humid locations, or where the unit might be exposed to water soot or direct sunlight. This may result in fire and malfunction.
- (3) Should foreign bodies (metal fragments, water, liquids) enter the unit, pull out the interface connector and contact your NEC TOKIN representative. Continued use of the unit may result in fire.
- (4) Should abnormalities occur, e.g. unusual heat generation, smoke, or foul smells, immediately pull out the interface connector and contact your NEC TOKIN representative. Continued use of the unit may result in fire.
- (5) DO NOT power the unit at voltages other than those specified.
- (6) DO NOT perform any modification on the unit as this may result in fire and malfunction.
- (7) Collisions and falls may result in damage to parts. Use special care during transfer.

3. Repair

You will be charged for all repairs on products whose warranty period has expired.

4. Handling of Magnetic Cards

DO NOT damage, soil or transform magnetic cards, or bring a card near a magnetic source as this may impair the card's reading capability.

5. RoHS

Please contact NEC TOKIN for individual card reader's RoHS compliance.



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Specifications of Each Series

■ ICM-3014(NPB) Series (Contactless IC card reader writer module)

Series	Set composition	Dimension [mm]	Applicable cards	Specifications
 ICM-3014(NPB)	ICM-3014(NPB) (Reader / writer module)	35×35	• ISO/IEC14443 Type A card (MIFARE®) • ISO/IEC14443 Type B card • ISO/IEC15693 compliant card (I-CODE SLI®, my-d®, Tag-it HFI®)	1. Voltage (VDC) : +5±5% 2. Average current consumed Carrier off max. 100mA During carrier output max. 200mA 3. Interface • C-MOS • RS-232C • USB2.0 (Full Speed)
 ICM-0003(NPB)	ICM-0003(NPB) (35×35mm antenna)	35×35		
 ICM-0004(NPB)	ICM-0004(NPB) (65×63mm antenna)	65×63		

Note 1) MIFARE® and I-CODE SLI® are trademarks of Koninklijke Philips Electronics




Note 2) my-d® is the trademark of Infineon Technologies AG.

Note 3) Tag it HFI® is the trademark of Texas Instruments Incorporated




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■ MCS-1303(NPB)/1603(NPB)/1803(NPB)/1604(NPB) Series : Manual Slide Type

Series	Model	Size (H×W×L) mm	Applicable cards				Specifications
			JIS-II	JIS-I (ISO7811/2)			
				Track1	Track2	Track3	
	MCS-1303(NPB)	29.5×27×100 with a cover 32×32.5×100	Read	-	-	-	1. Voltage (VDC) +3±5%~+5±10% 2. Current consumed (mA) max. Single Track : 2.5 Double Track : 5.0 3. Card swipe speed (mm/sec) 100~1,200 (2.85V ≤ V _{CC} < 4.0V) 100~1,500 (4.0V ≤ V _{CC} ≤ 5.5V) 4. Output current (mA) 4 (Level 1 : V _{CC} =+5V, VoL=0.2V) -4 (Level 0 : V _{CC} =+5V, VoH=4.5V) 5. Interface TTL 6. Life 300,000 passes (for Permalloy heads, indoor use)
	MCS-1313(NPB)		-	-	Read	-	
	MCS-1323(NPB)		-	Read	-	-	
	MCS-1333(NPB)		-	-	-	Read	
	MCS-1603(NPB)	24×26×90 (Cableless) with a cover 28×38×90	Read	-	-	-	
	MCS-1613(NPB)		-	-	Read	-	
	MCS-1623(NPB)		-	Read	-	-	
	MCS-1653(NPB)		Read	-	Read	-	
	MCS-1803(NPB)	17×20×70 (Cableless)	Read	-	-	-	
	MCS-1813(NPB)		-	-	Read	-	
	MCS-1823(NPB)		-	Read	-	-	
	MCS-1604(NPB)	24×26×90 (Cableless)	Read	-	-	-	
	MCS-1614(NPB)		-	-	Read	-	
	MCS-1624(NPB)		-	Read	-	-	
	MCS-1644(NPB)		Read	-	Read	-	

■ MCP-1372(NPB) : Card Reader Kits

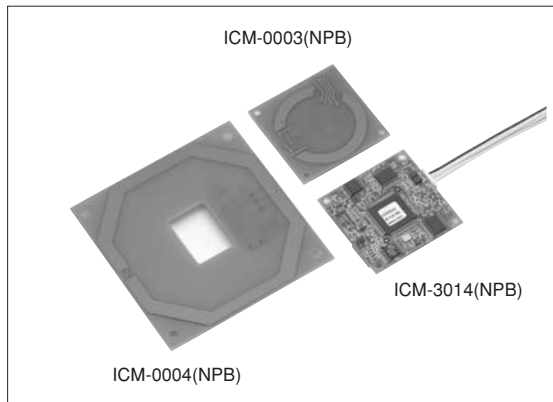
Series	Model	Size (H×W×L) mm	Applicable cards				Specifications
			JIS-II	JIS-I (ISO7811/2)			
				Track1	Track2	Track3	
	MCP-1372(NPB)	21×21.2×60	Read	Read	Read	-	1. Attached IC : BS300E (48-Pin SSOP Package) 2. Voltage (VDC) : 3.0 ~ 3.6, 4.75 ~ 5.25 3. Current consumed (mA) max. : 1.0, 1.25 4. Output voltage (V) Level 1 : V _{CC} =+5V, VoL=0.4V Level 0 : V _{CC} =+5V, VoH=4.0V



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Contactless IC Card Reader Writer Module

ICM-3014(NPB) Series



Product Overview

ICM-3014(NPB) series is an IC reader/writer module compliant to proximity IC card (ISO/IEC14443) type A (MIFARE®) / type B and vicinity IC tag (ISO/IEC15693).

- ICM-3014(NPB) (reader/writer module)
- ICM-0003(NPB) (35×35 antenna)
- ICM-0004(NPB) (65×63 antenna)
- ICM-0023(NPB) (15×30 antenna)

Features

- In addition to modules that are specialized for one standard, multiprotocol type that can accommodate various standard by software is available.
- Small dimension enables easy installation. (35×35mm size)
- Upward interface can be selected. (C-MOS, RS232C, USB2.0(full speed))
- The combination of this reader/writer module and antenna has acquired high frequency radio wave availability equipment based on the radio law of Japan.
- Various sized antenna can be selected depending on the usage. (35×35mm, 65×63mm)

Applications

- ID and security (employee ID card, student ID card, room entry/exit control system, card key system)
- Logistics and factory automation (discount card, membership control, payment control, merchandise control, process control)

Reader Writer Module Numbering System

ICM - 3014 - □□ (NPB)

Card type	Interface
A : ISO / IEC14443 type A	C : C-MOS
T : ISO / IEC15693	R : RS-232C
B : ISO / IEC14443 type A	U : USB2.0 (Full Speed)
ISO / IEC14443 type B	
ISO / IEC15693	

Reader Writer Specifications

Subject	Specification
Compliant cards and tags	<ul style="list-style-type: none"> • ISO/IEC14443 typeA (MIFARE®) • ISO/IEC14443 typeB • ISO/IEC15693 (I-CODE SLI®, my-d®, Tag-it HFI® *2)
Transmission frequency	13.56MHz
Transmission distance (reference) *1	up to 10cm
interface	C-MOS, RS-232C, USB2.0(Full Speed)
Display	LED × 2
Power supply voltage	DC5V±5%
Average current consumption	Without carrier output: MAX 100mA During carrier output: MAX200mA
Operating condition	0-50 °C/30-90%RH, non condensing
Set composition	<ul style="list-style-type: none"> • ICM-3014 (reader/writer module) • ICM-0003 (35×35 antenna) • ICM-0004 (65×63 antenna) • ICM-0023 (15×30 antenna)

*1 Transmission distance may vary depending on antenna, card and transmission condition

*2 MIFARE® and I-CODE SLI® are trademarks of Koninklijke Philips Electronics. Tag-it HFI® is the trademark of Texas Instruments Incorporated. My-d® is the trademark of Infineon technologies AG.

*Please refer to specification sheet for details



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Application Development Assistance Tool (sold separately)

1. Control Library

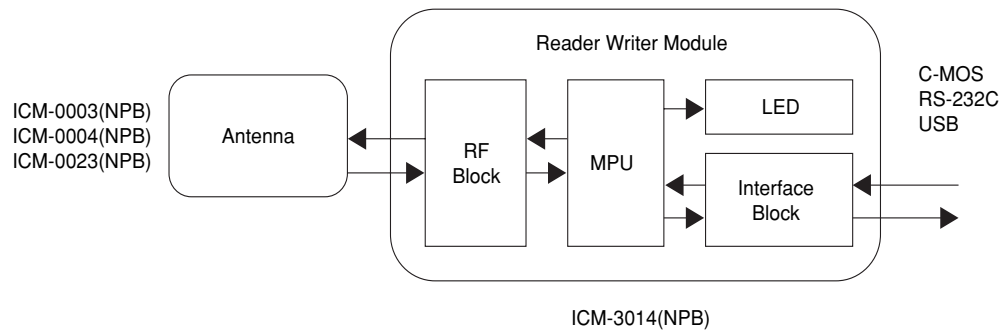
In case when developing the original application in Windows environment at the customer side, API for Windows is available for speeding up the development time.

2. Sample Program

Sample application program for Windows that enables function evaluation of ICM-3014(NPB) is available.

*Windows is the registered trademark of Microsoft corporation.

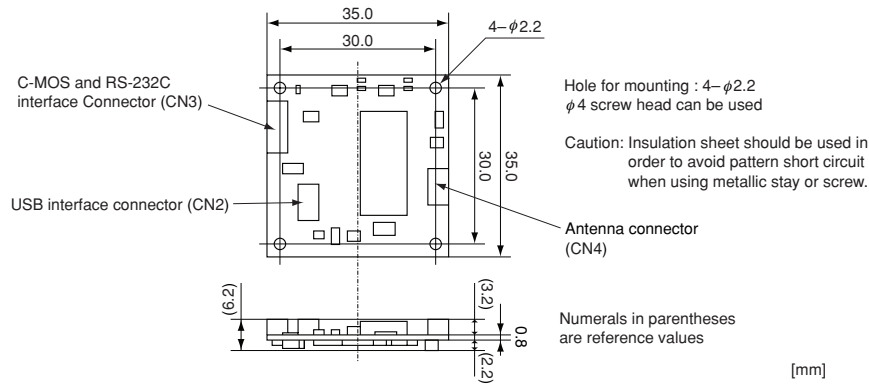
Block Diagram



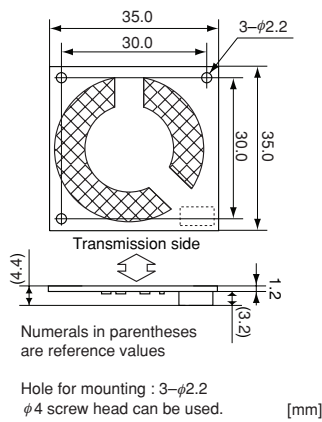
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Shape and Dimensions

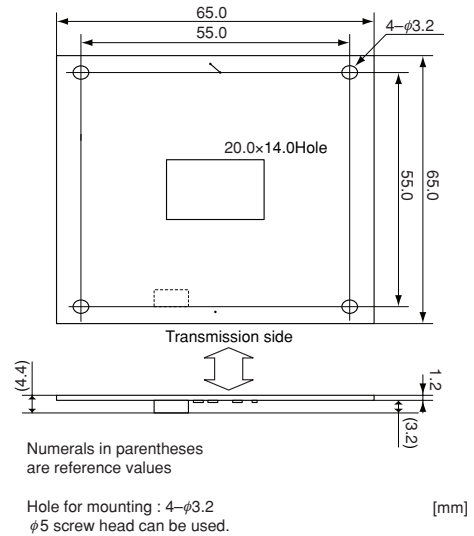
- ICM-3014(NPB) Series



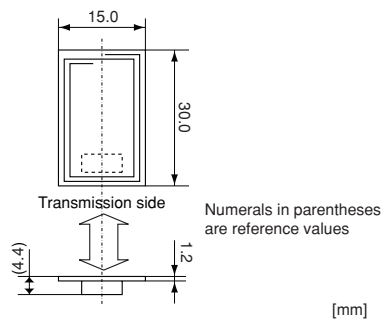
- ICM-0003(NPB) (35 × 35 antenna)



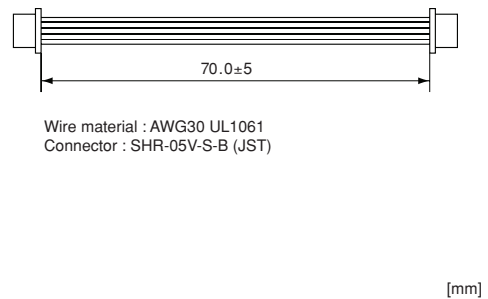
- ICM-0004(NPB) (65 × 63 antenna)



- ICM-0023(NPB) (15 × 30 antenna)



- Antenna cable



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IC Card



Contact IC Card



Dual Interface IC Card

Specifications

● Contact IC Card

	CCI504-S
Compliant Standard	ISO / IEC7816 JICSAP
CPU	included
Memory capacity	4k byte
Features	<ul style="list-style-type: none"> • ISO / IEC7816 Contact type • DES coding algorithm hardware built in.

● Dual Interface IC Card

	Dual interface card
Compliant Standard	ISO / IEC7816 ISO / IEC14443 TypeB compliant
CPU	included
Memory capacity	8k byte
Features	<ul style="list-style-type: none"> • ISO / IEC14443 TypeB • DES coding algorithm hardware built in.

*We can also custom-make card dimensions and specifications.
For details, consult your NEC TOKIN sales representative.



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RFID



Features

- Various size and shape available besides card size such as small tag, coin shape and sticker size.
- High security is achieved by built in DES coding algorithm hardware. (type B)
- Food hygiene law of Japan compliant (LCS3 series)

Applications

- Security system, ID certification, customer control, logistics and restaurant payment system.

Specifications

● RFID

	LCS3 Series	Type B	MIFARE®	I-CODE SLI®	HITAG™1 / HITAG™2
Compliant standard	Original	ISO/IEC14443 Type B	ISO/IEC 14443	ISO/IEC15693	Original
CPU	equipped	equipped	not equipped	not equipped	not equipped
Memory size	140 byte	8k byte	1024 byte	1024 bits	256 byte / 32 byte
Transmission distance	6cm	up to 5cm *2	up to 5cm *2	up to 8cm *2	up to 3.5cm *2
Dimensions (mm)	φ30 × t2.1	card size	*1	*1	*1
Material	PPS resin (compliant to food hygiene law of Japan)	PVC/PET-G	PVC/PET-G	PVC/PET-G	PVC/PET-G

*1 Card size : 85×54mm (ISO7816 Compliant size)
 Half size : 43×54mm
 Mini size : 31×23mm
 φ20 size : φ20mm
 Sticker size : 22×12mm

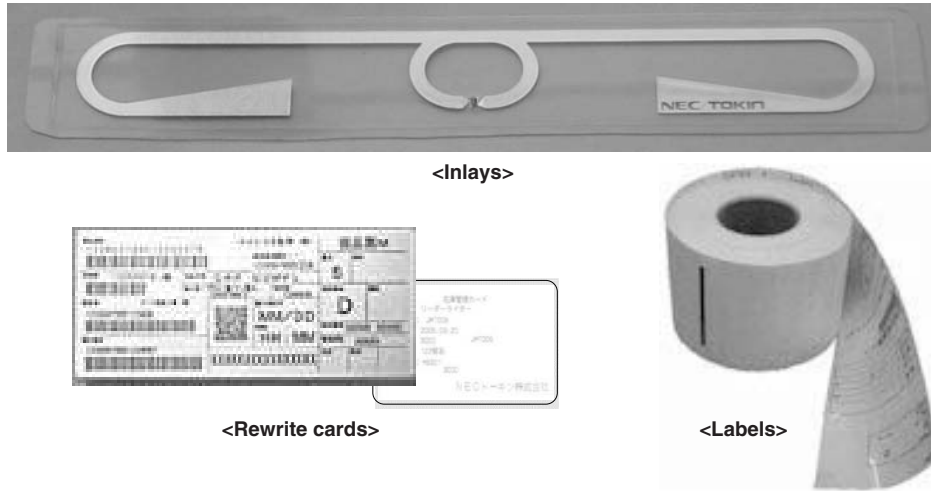
*2 Transmission distance is measured using NEC TOKIN designated reader / writer.

We can also custom-make card dimensions and specifications. For details, consult your NEC TOKIN sales representative.
 I-CODE SLI®, MIFARE®, HITAG™1 and HITAG™2 are trademarks of koninklijke Philips Electronics N.V.



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RFID Tags (Inlays, Labels, and Cards) Supporting EPCglobal UHF Gen2 Global Standard



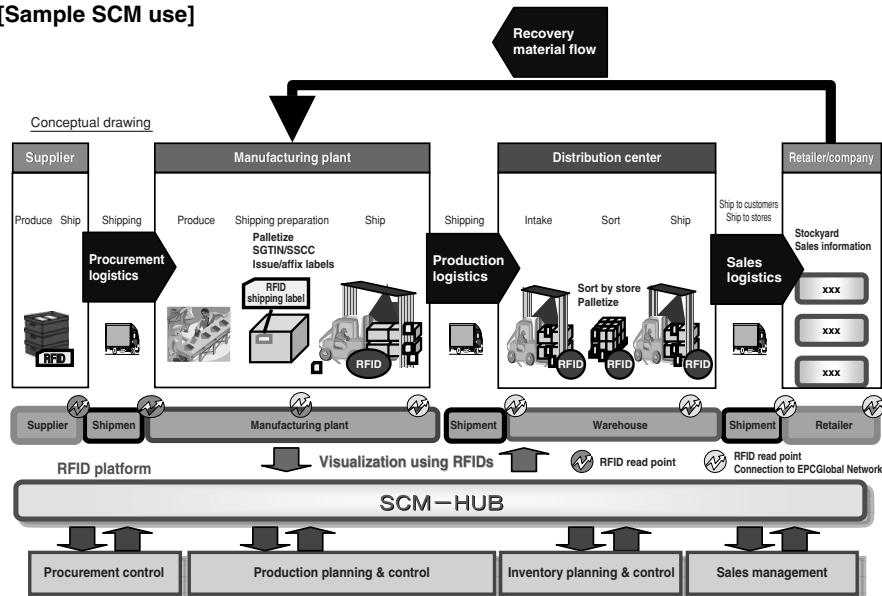
Features

- Supports EPCglobal UHF Class1 Gen2 standard.
- Antenna features broad bandwidth spectrum enabling worldwide use (Japan, United States, Europe, and other countries).
- Simulation technologies used in antenna design, enabling support for customization.

Applications

- SCM workflow streamlining (procurement – production – distribution – sales – recycling)
- Streamlining of shipping inspections, inventory visualization, and other benefits for distribution and logistics processes
- Managing distribution, production, materials, pharmaceuticals, location, assets, inventories, and more

[Sample SCM use]

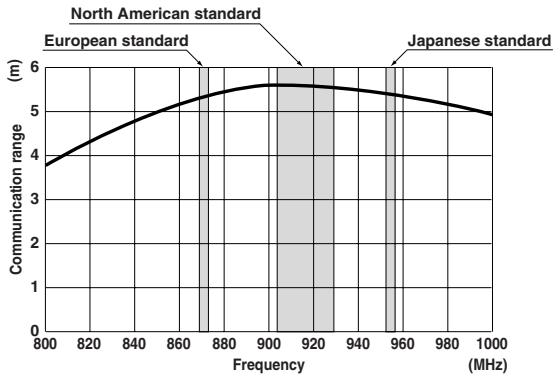


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Brief product specifications

Supported standard	EPCglobal UHF Class1 Gen2
Frequency	860–960 MHz (Japan, United States, Europe, and other countries)
IC chip used	EPCglobal UHF Class1 Gen2 MONZA™/Impinj
Memory	User area: 96-bit NVM
External dimensions	93 x 11 mm (inlay)

Frequency characteristics



<UHF-band reader/writer>

RFID frequency characteristics (design simulation)

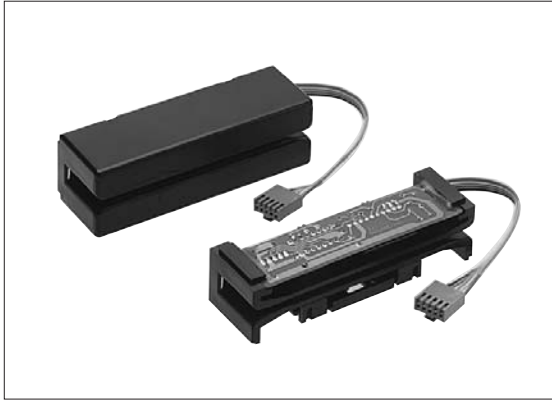
Notes:

- 1: Products listed in this catalog may differ slightly from mass-produced products in design and other aspects.
- 2: EPCglobal is a non-profit organization promoting global standards for systems using RFID technologies.
RFID Manager® is a registered trademark of NEC Corporation.



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MCS-1303(NPB) Series



Outline

NEC TOKIN's MCS-1303(NPB) series manual magnetic card readers include all the necessary components: a decoder IC and a magnetic head. The tension bar mechanism which holds the head allows cards to run smoothly, extending both the life of the cards and the head. There are three types of readers in the MCS-1303(NPB) series that are compatible with most types of tracks. The cover is optional.

Features

- Operable at a low voltage (+3 VDC to +5 VDC) because of its newly developed decoder IC.
- Low current consumption.

Markings

MCS-13□□□(NPB)

Applicable magnetic card	Magnetic head type	Type of product	Option
0 : JIS-II	P : Permalloy	1 : Standard	Blank : Coverless
1 : JIS-I (ISO7811/2) track 2			E : Covered
2 : JIS-I (ISO7811/2) track 1			

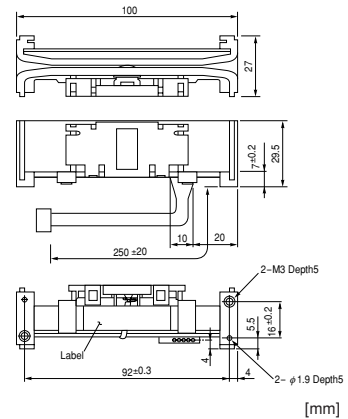
Interface

No.	Connector type (Maker/Harness dimensions)	Pin No.								
		1	2	3	4	5	6	7	8	9
MCS-1303P-1(NPB)	IL-5S-S3L-(N) (JAE, 250mm)	RDD	RCP	CLS	Vcc	GND	-	-	-	-
MCS-1313P-1(NPB)	IL-5S-S3L-(N) (JAE, 250mm)	RDD	RCP	CLS	Vcc	GND	-	-	-	-
MCS-1323P-1(NPB)	IL-5S-S3L-(N) (JAE, 250mm)	RDD	RCP	CLS	Vcc	GND	-	-	-	-

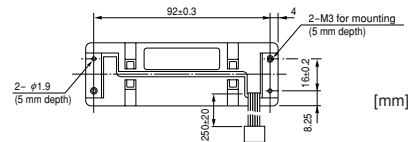
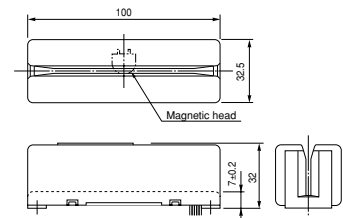
CLS : Card Loading Signal
 RCP : Reading Clock Pulse
 RDD : Reading Decode Data

CLS1, RCP1, RDD1 : JIS-I (ISO7811/2) track 1 or 3
 CLS2, RCP2, RDD2 : JIS-I (ISO7811/2) track 2

Shape and Dimensions



Connector (IL-5S-S3L) by Japan Aviation Electronics Industry, Limited



Connector (IL-5S-S3L) by Japan Aviation Electronics Industry, Limited



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MCS-1603(NPB) Series



Outline

NEC TOKIN's MCS-1603(NPB) series manual magnetic card readers include all the necessary components: a decoder IC and a magnetic head. The tension bar mechanism which holds the head allows cards to run smoothly, extending both the life of the cards and the head. There are two types of readers in the MCS-1603(NPB) series: A single-sided reader and a double-sided reader.

Features

- Operable at a low voltage (+3 VDC to +5 VDC) because of its newly developed decoder IC.
- Low current consumption.

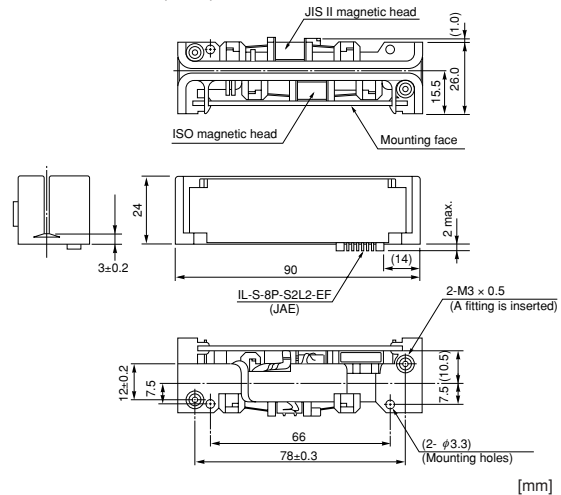
Markings

MCS - 16 □ 3 □ - □ □ (NPB)

Applicable magnetic card	Magnetic head type	Type of product	Option
0 : JIS-II	P : Permalloy	1 : Standard	Blank: Coverless
1 : JIS-I (ISO7811/2) track 2			
2 : JIS-I (ISO7811/2) track 1			
5 : JIS-II			
JIS-I (ISO7811/2) track 2			

Shape and Dimensions

- MCS-1653P-1(NPB)



Interface

No.	Connector type (Maker)	Pin No.												Remarks
		1	2	3	4	5	6	7	8	9	10	11	12	
MCS-1603P-1(NPB)	IL-S-8S-S2C2-S (JAE)	GND	Vcc	NC	NC	NC	RDD	RCP	CLS	-	-	-	-	
MCS-1613P-1(NPB)	IL-S-8P-S2L2-EF (JAE)*	GND	Vcc	RDD	RCP	CLS	NC	NC	NC	-	-	-	-	
MCS-1623P-1(NPB)	IL-S-8P-S2L2-EF (JAE)*	GND	Vcc	NC	NC	NC	RDD	RCP	CLS	-	-	-	-	
MCS-1653P-1(NPB)	IL-S-8P-S2L2-EF (JAE)*	GND	Vcc	RDD2	RCP2	CLS2	RDD1	RCP1	CLS1	-	-	-	-	1:JISII 2:ISO2

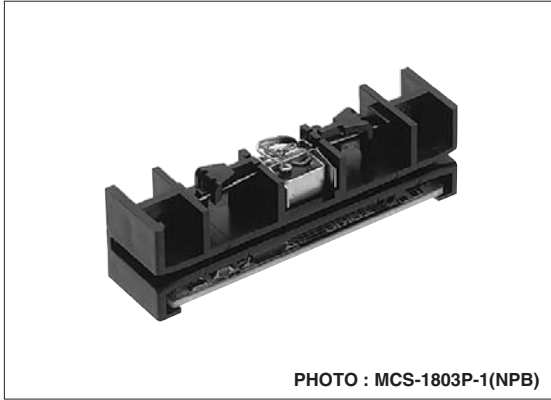
* Please request for a copy of specification sheet for details.

CLS : Card Loading Signal
 RCP : Reading Clock Pulse
 RDD : Reading Decode Data



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MCS-1803(NPB) Series



Outline

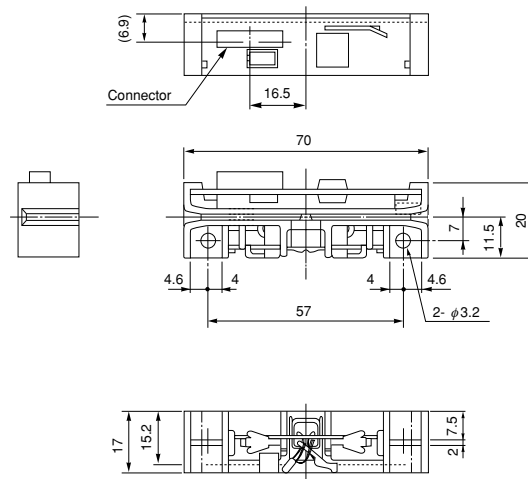
NEC TOKIN's MCS-1803(NPB) series manual magnetic card readers are very compact, high-performance devices. They require only a small installation space, which enhances freedom in designing the main unit.

Features

- Operable at a low voltage (+3 VDC to +5VDC) because of its newly developed decoder IC.
- Low current consumption.

Shape and Dimensions

- MCS-1803P-1(NPB)



Markings

MCS - 1 8 3 - (NPB)

Applicable magnetic card	Magnetic head type	Type of product
0 : JIS-II	P : Permalloy	1 : Standard
1 : JIS-I (ISO7811/2) track 2		
2 : JIS-I (ISO7811/2) track 1		

Interface

No.	Connector type (Maker)	Pin No.							
		1	2	3	4	5	6	7	8
MCS-1803P-1(NPB)	IL-S-5P-S2T2-EF (JAE)	GND	V _{cc}	CLS	RCP	RDD	-	-	-
MCS-1803P-2(NPB)	IL-S-5P-S2L2-EF (JAE)	GND	V _{cc}	CLS	RCP	RDD	-	-	-
MCS-1803P-3(NPB)	S5B-PH-K-S (J.S.T.Mfg.Co., Ltd.)	GND	V _{cc}	CLS	RCP	RDD	-	-	-
MCS-1803P-4(NPB)	B5B-PH-K-S (J.S.T.Mfg.Co., Ltd.)	GND	V _{cc}	CLS	RCP	RDD	-	-	-

CLS : Card Loading Signal
RCP : Reading Clock Pulse
RDD : Reading Decode Data

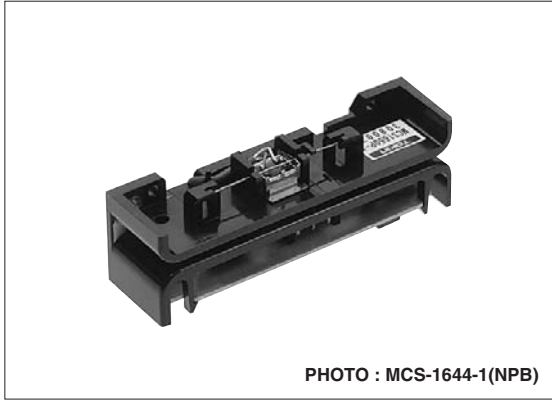
Connector type of MCS-1813P and MCS-1823P. Pin Nos. conform to those of MCS-1803P.

[mm]



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MCS-1604(NPB) Series



Outline

NEC TOKIN's MCS-1604(NPB) series manual magnetic card readers include all the necessary components: a decoder IC and a magnetic head. The tension bar mechanism which holds the head allows cards to run smoothly, extending both the life of the cards and the head.

Features

- RS-232C Interface

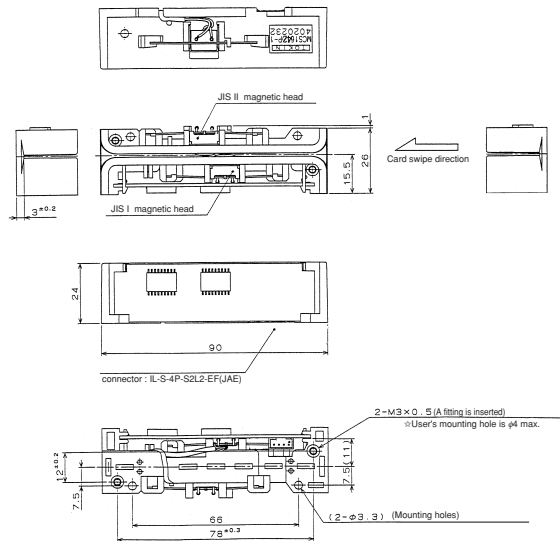
Markings

MCS - 1 6 □ 4 □ - □ (NPB)

Applicable magnetic card	Magnetic head type	Type of product
0 : JIS-II	P : Permalloy	1 : Standard
1 : JIS-I (ISO7811/2) track 2		
2 : JIS-I (ISO7811/2) track 1		
4 : JIS-II JIS-I (ISO7811/2) track 2		

Shape and Dimensions

- MCS-1644-1(NPB)



[mm]

Interface

No.	Connector type (Maker)	Pin No			
		1	2	3	4
MCS-1604P-1(NPB)	IL-S-4P-S2L2-EF (JAE)	GND	+5V	RxD	TxD
MCS-1614P-1(NPB)					
MCS-1624P-1(NPB)					
MCS-1644P-1(NPB)					



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Specifications

		MCS-1604(NPB) Series	
Interface	Communication standards	EIA/TIA-232E, RS-232C ($\pm 10V$ level)	
	Communication method	Half-duplex start/stop sync. system (Full-duplex for connection)	
	Transmission speed (bps)	1200/2400/4800/9600 (Factory setting: 9600) (Factory setting cannot be changed.)	
	Communication format	Start bit	1 bit
		Data bit	8 bits
Parity		1-bit (even number, odd number), or NON (Factory setting: 1-bit (even)) Factory setting cannot be changed.	
	Stop bit	1-bit	
Magnetic cards	Usable cards	See Markings Front surface : JIS56301,6302 II Reverse surface : JIS56301,6302 I (ISO7811/2)	
	Card swipe speed (mm/sec)	100-1200	
	Card transport method	Manual	
Power supply	DC	Voltage: DC +5.0 V \pm 5%, Current consumption: Less than 80mA (ripple 100mVp-p) (Power is supplied by interface connector.)	
Dimensions (mm)		24 (H) \times 26 (W) \times 90 (D) (excluding protrusions)	
Weight (g)		Approx. 40	

Note 1: Please consult us separately for a product applicable to cards for financial purposes.



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Magnetic Card Reader Kit MCP-1372(NPB)



Outline

The MCP-1372(NPB) is an ultra-miniature product for installation in portable terminals.

The head, frame and decoder IC are available as a kit. Use of this product allows the magnetic card reader size to be minimized, and installation of an IC chip circuit on the adopting unit side will realize utmost performance.

The tension bar system to ensure smooth card swipe as a specific feature of NEC TOKIN's card reader can also be used.

Features

- Operable at a low voltage(+3VDC to +5VDC)because of its newly developed decoder IC.
- Low current consumption.
- Can process data from three tracks by single IC chip.

Interface

		MCP-1372(NPB)	
Connection	PIN No.	Pin Assignment	
Pin Assignment	1	IN-(ISO1)	
	2	Ground	
	3	IN-(ISO2)	
	4	IN+(ISO2)	
	5	IN+(ISO1)	
	6	IN-(JIS II)	
	7	Ground	
	8	IN+(JIS II)	
Connector	Connector housing 8FM-1.0***(JST Mfg.Co.Ltd.)		

IN+ : Head Output Signal

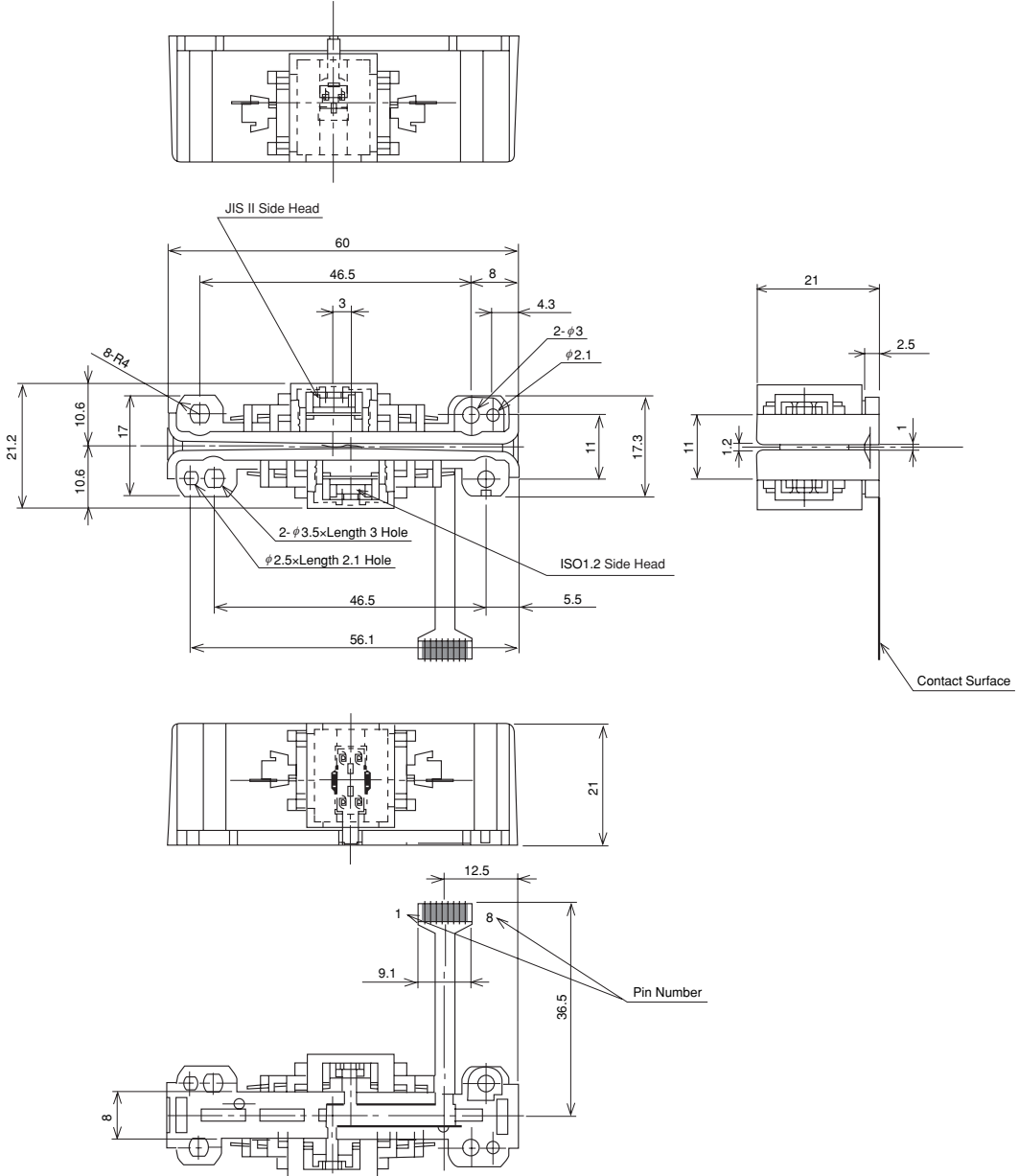
IN- : Head Output Signal

Ground: Shield Case



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Shape and Dimensions



[mm]



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Magnetic Cards

Physical characteristics	Front surface JIS × 6301- II Back surface JIS × 6301- I (ISO7811/2)
Recording technical	Front surface JIS × 6302- II Back surface JIS × 6302- I (ISO7811/2)

Recording density				bit composition	Data capacity	JIS- II
TRACK	210 bpi	8 bit/Character	72 Character			

Recording density				bit composition	Data capacity	JIS- I (ISO7811/2)
TRACK1	210 bpi	7 bit/Character	79 Character			
TRACK2	75 bpi	5 bit/Character	40 Character			
TRACK3	210 bpi	5 bit/Character	107 Character			



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GENERAL NOTES

(Limitations and Liabilities)



- The names of the products and the specifications in this catalog are subject to change without notice for the sake of improvement. The manufacturer also reserves the right to discontinue any of these products. At the time of delivery, please ask for specification sheets to check the contents before use.
- Descriptions in this catalog regarding product characteristics and quality are based solely on discrete components. When using these units configured within a system or installing them into a product, be sure to evaluate and confirm the specifications with full considerations to particular applications.
- The manufacturer's warranty will not cover any disadvantage or damage caused by improper use of the products, deviating from the characteristics, specifications, or conditions for use described in this catalog.
- When constructing a financial card reader system using these units, the manufacturer will not take any responsibility for improper actions such as the forgery of magnetic cards that may occur during the management and administration of the system.
- Please be advised that the manufacturer accepts no responsibility for any infraction on third party patents or industrial copyrights by users of the manufacturer's products. The manufacturer is responsible only when such infractions are attributable to the structural design of the product and its manufacturing process.
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