VISUAL CARD READER/WRITER

MCP300 SERIES
MCM300 SERIES

PROGRAMMER'S MANUAL

Federal Communications Commission
Radio Frequency Interference
Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For compliance with the Federal Noise Interference Standard, this equipment requires a shielded cable.

This statement will be applied only for the printers marketed in U.S.A.

Statement of
The Canadian Department of Communications
Radio Interference Regulations

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

The above statement applies only to printers marketed in Canada.

CE
Manufacturer's Declaration of Conformity

EC Council Directive 89/336/EEC of 3 May 1989

This product, has been designed and manufactured in accordance with the International Standards EN 50081-1/01.92 and EN 50082-1/01.92, following the provisions of the Electro Magnetic Compatibility Directive of the European Communities as of May 1989.

EC Council Directive 73/23/EEC and 93/68/EEC of 22 July 1993

This product, has been designed and manufactured in accordance with the International Standards EN 60950, following the provisions of the Low Voltage Directive of the European Communities as of July 1993.

The above statement applies only to printers marketed in EU.

Trademark acknowledgments

MCP300,MCM300: Star Micronics Co. Ltd.

Notice

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- The contents of this manual are subject to change without notice.
- All efforts have been made to ensure the accuracy of the contents of this manual at the time of going to press. However, should any errors be detected, STAR would greatly appreciate being informed of them.
- The above notwithstanding, STAR can assume no responsibility for any errors in this manual.

Precautions

Please read this manual carefully and follow the instructions to fully understand the contents, before using this product. Misuse can cause an accident, or damage the product and/or the peripherals.

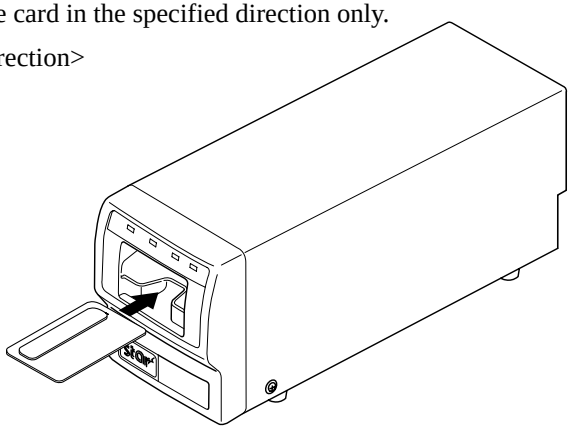
● At the Installation:

1) This system is a precision type. Install this system at a solid and horizontal plane. Do not apply shock or vibration to the system.
2) Do not install this system at a place where the system may be exposed to direct sunlight, heavy dust, heat and humidity.
3) Do not install this system at a place where the system inside may be exposed to water, oil and metal powder or where the system may be exposed to corrosive gas and chemical steam.
4) This system prints to a human readable area by using magnetic field. Do not install this system at a place where the system is exposed to magnetic field.
5) Be sure to apply the specified power supply of AC120, 230, 240V, 50/60Hz.
6) Do not share the power outlet with a noise causing electric instrument.
7) Prepare the earth ground at the power supply connector.
8) Keep an ample amount of space to operate the system and which allows for radiation.

● During the operation:

1) Do not use any other card than our specified card.
2) Do not use the card if wet, stained with oil, etc. After using the dirty/wet card accidentally, clean up both the card and the system (reader/writer).
3) Do not touch the card with a hand stained with oil, etc.
4) Keep the card away from magnetized or electric devices that cause magnetic fields, such as speakers, TV set etc.
5) Do not use a bent card, otherwise the card may be caught inside the system.
6) Insert the card in the specified direction only.

<Specified Direction>



7) Do not insert any other material in the card slot other than the card.
8) Do not turn off the power switch during card processing.
9) When any of the anomalous (noise, off-flavor, smoke, firing, etc.) is found, turn off the power switch and disconnect the power cable immediately.
10) Do not start the system after changing the environmental condition (temperature, humidity etc.), even if under the specified condition. Leave the system about one hour in the new conditions before you start. Do not use the system under condensation.
11) It is recommended to clean the system at regular intervals, in order to keep the reliability of the system.
12) MCP300/MCM300 has no method to detect insertion of invalid card. If printing on the human readable area is executed when an invalid card is inserted, damage can occur to the mechanism and/or card. Care should be taken not to print visual data to an incorrectly inserted card.

CONTENTS

1 OUTLINE

The MCP300 series is a reading/writing device for specified IC card or reading device for ISO magnetic stripe type plastic card.

It also has print/erase capability to a re-writable human readable area on the surface of the card. This series is compatible with most host computers and various P.O.S. systems.

The main features of the MCP300 series are as follows:

1. Reads data from a specified IC chip on the card.
2. Writes data to a specified IC chip on the card.
3. Reads data from a magnetic stripe on the card.
4. Prints characters to a human readable area and erases them.
4. Serial interface of RS-232C(MCP300 housed unit), or CMOS(MCM300 mechanism unit).
5. The human readable area of the card may be re-used up to 10,000 times under the proper condition.
6. Number of printing characters:
   3 lines of 29 characters by 12 X12 dot font
   3 lines of 22 characters by 16 X 16 dot font
   2 lines of 14 characters by 24 X 24 dot font

Model Name

<Housed unit (with IC controller PCB and power supply)>

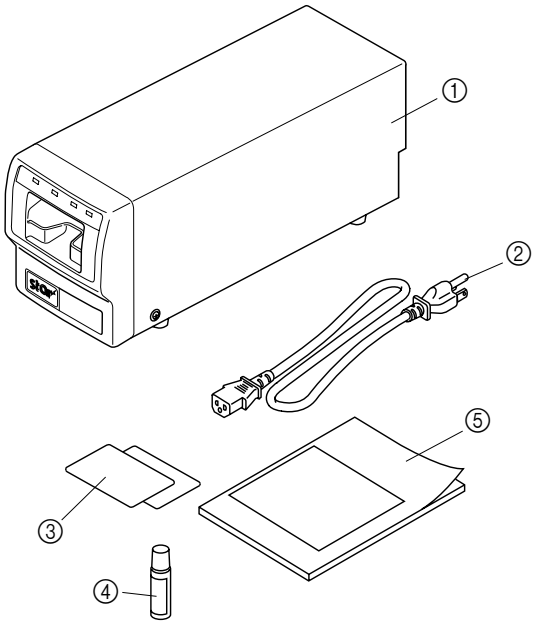
MCP310TD	Specified IC card read/write, Magnetic stripe read
MCP310RD	Magnetic stripe read
MCP390TD	Specified IC card read/write

<Mechanism unit>

MCM310X	IC card contact, Magnetic stripe read
MCM310R	Magnetic stripe read
MCM390X	IC card contact

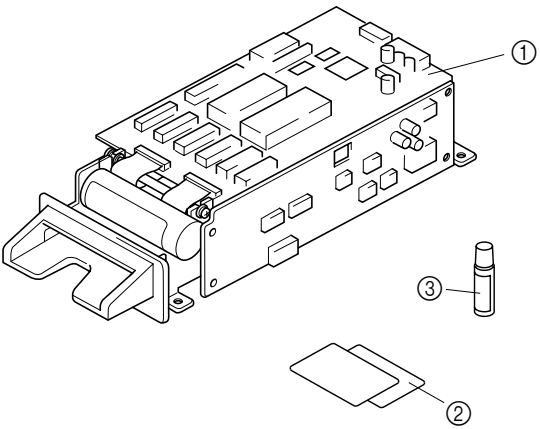
2 UNPACKING

After unpacking the unit, check that all the accessories are included in the individual box.



MCP300 housed unit

① MCP300
② Power cable
③ Cleaning card (2 pcs)
④ Cleaning liquid
⑤ Installation manual

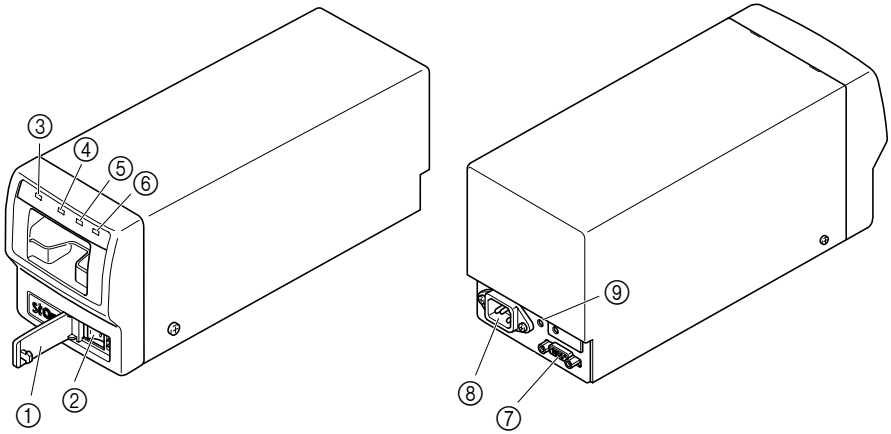


MCM300 mechanism unit

① MCM300
② Cleaning card (2 pcs)
③ Cleaning liquid

3 APPEARANCE AND NOMENCLATURE

3-1. MCP300 Housed Unit (with IC controller and power supply)



① Switch Cover — This cover protects the power switch of the system. Push to open and close.

② Power Switch — This switch turns the power of the system on/off.

③ POWER LED — This LED indicates that the power of the system is on.

④ READY LED — This LED mainly indicates that the card processing is ready.

⑤ OK LED — This LED mainly indicates that the card has been processed without error.

⑥ ERROR LED — This LED mainly indicates that the card has not been read due to an error e.g. jamming of the card in the Reader/Writer.

*The function of ④ to ⑥ LED is defined by the software of host computer.

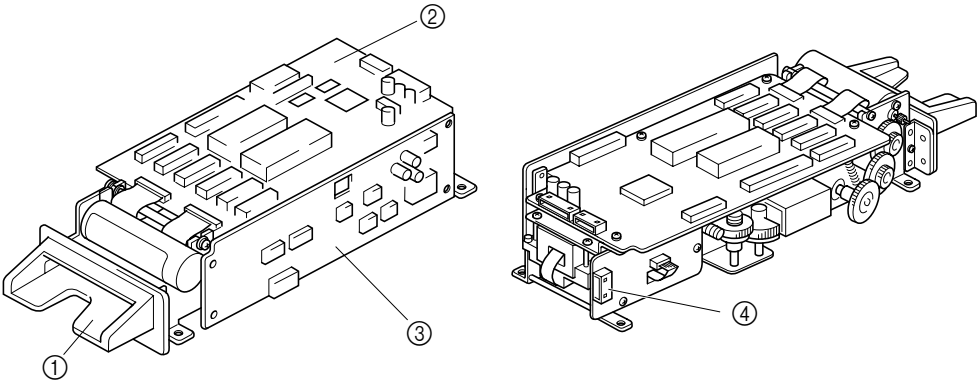
⑦ RS-232C serial connector — This connector interfaces the connection between host computers and the Reader/Writer.

⑧ AC Power Inlet — Connect this inlet to the power source with the attached AC power cable.

IMPORTANT!
A three terminal earth grounded power supply cable is attached with MCP300 housed unit. For safety, do not remove the ground pin.

⑨ Reset Switch — In order to reset MCP300 reader/writer, please insert a pin and push the internal reset switch.

3-2. MCM300 Mechanism unit (without IC controller PCB)

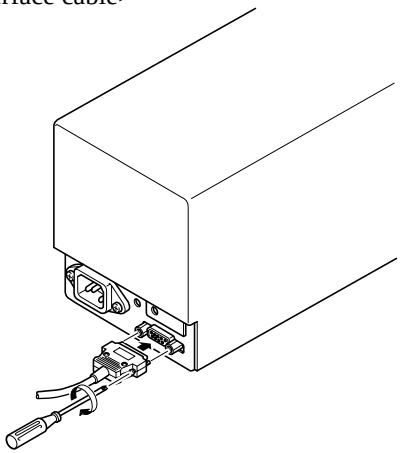


① Card Slot
② Control Board (serial interface connector, power supply connector)
③ Driver Board
④ IC connector (usable with MCM310X, MCM390X)

4 CONNECTION TO EXTERNAL UNITS AND SETTING

4-1. MCP300, housed unit (with IC controller PCB and power supply)

<Connecting the interface cable>



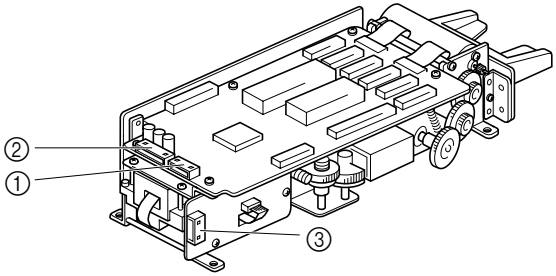
① Turn off the power of the host computer and the Reader/Writer.
② Plug in an end of the interface cable to the Reader/Writer connector and the other end to the serial port of the host computer.
③ Fasten two screws located at both the shoulders of the interface cable connectors.

<Serial Interface (RS-232C)>

① Applicable connector: D-sub 9 pin(Male),
Socket DDK-17JE-13090-37(Female)
② Connector terminals: See the table below
③ Level: RS-232C

Pin No. No.	Signal name	Direction	Function
2	RXD	IN	Received data
3	TXD	OUT	Transmitted data
4	DTR	OUT	Data-terminal-ready (always ON after reset)
5	S-GND	-	Signal ground
6	CTS/DSR	IN	Clear-to-send Data-set-ready(no detection)
7	RTS	OUT	Request to send (always ON after reset)

4-2. MCM300, mechanism unit (without IC controller)



① Serial interface connector
② Power supply connector
③ IC connector

① Serial interface connector

Installed connector: Molex 53015-0710
Mating connector: Molex 51004-0700

Main PCB CN1

Pin No.	Signal name	Direction	Function
1	VCC	OUT	Not connected
2	GND	-	Signal ground
3	TXD	OUT	Transmitted data
4	RXD	IN	Received data
5	RTS	OUT	Request-to-send (always ON after reset)
6	-	-	Not connected
7	RESET	IN	Not connected

②Power Supply connector

Installed connector: Molex 53015-1010
Mating connector: Molex 51004-1000

Main PCB CN2

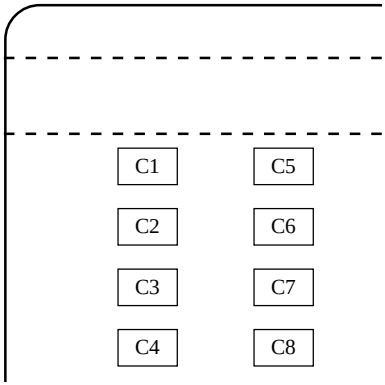
Pin No.	Signal name	Function
1	VCC	+5V Power supply for logic
2	VCC	+5V Power supply for logic
3	GND	Power supply Ground for VCC
4	GND	Power supply Ground for VCC
5	VPP 1	+5V Power supply for mechanism
6	VPP 1	+5V Power supply for mechanism
7	VPP 2	+24V Power supply for mechanism
8	VPP 2	+24V Power supply for mechanism
9	P-GND	Power supply Ground for VPP1/VPP2
10	P-GND	Power supply Ground for VPP1/VPP2

In order to avoid malfunction, GND and P-GND are not connected internally.
Common ground connection must be made at the power supply.

③ IC connector

Installed connector: Molex 53015-0810
Mating connector: Molex 51004-0800

Pin No.	Contact No.
1	C1
2	C5
3	C2
4	C6
5	C3
6	C7
7	C4
8	C8

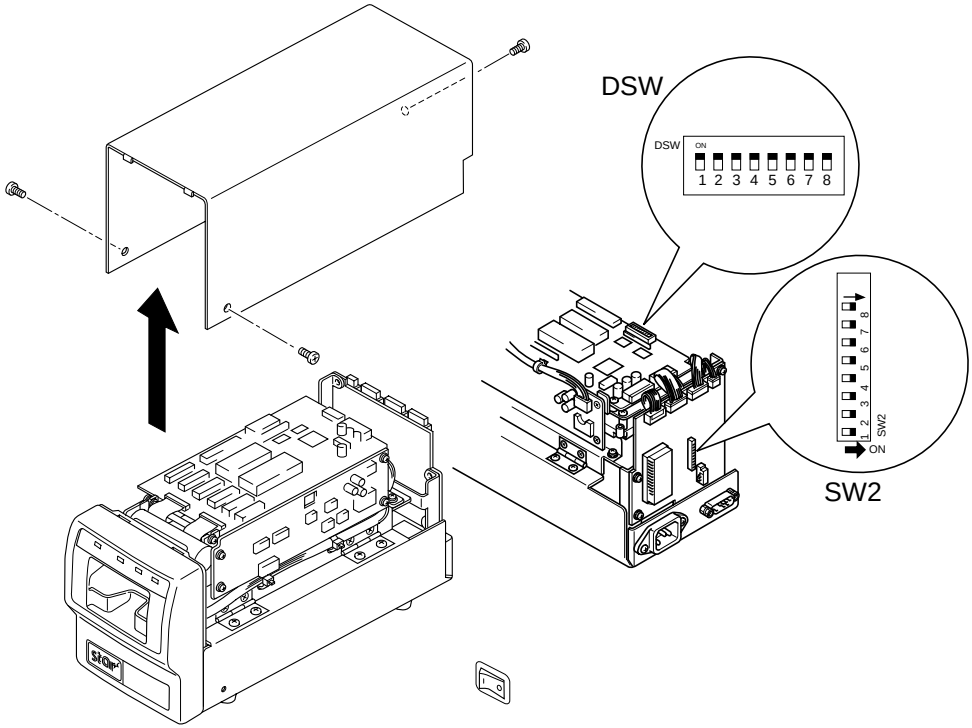


Contact location

5 DIP SWITCH SETTING

5-1. MCP300, Housed unit (with IC controller PCB and power supply)

Follow these instructions to change the setting.



① Turn off the power of host computer and the Reader/writer.

IMPORTANT!
Before starting, disconnect the power cable from the Reader/Writer to avoid accidents such as electric shock.

② Remove 3 screws from the upper cover.
2 switches: DSW on mechanism unit ,SW2 on IC controller PCB are exposed
The factory setting is all ON.

③ Set the DIP switches.

IMPORTANT!
Pay attention not to drop anything into the machine, when the cover is open.

The function of the DIP Switches(DSW) is as follows.
This is applied only for US/EC version.

No.	Function	OFF	ON	Default
2	Setting International Characters	Code #437	Code #850	ON

The function of the DIP Switches(SW2) is as follows.

No.	Function	OFF	ON	Default
1	Always set to ON State			ON
2	Always set to ON State			ON
3	Baud rate	See the table below		ON
4	Baud rate	See the table below		ON
5	Stop bits	2 bits	1 bit	ON
6	Parity	Odd	Even	ON
7	Parity	Valid	Invalid	ON
8	Character length	7 bits	8 bits	ON

3	4	Baud rate
OFF	ON	2400
ON	OFF	4800
ON	ON	9600
OFF	OFF	19200

④ After setting the switches, carefully replace the cover.
Replace three screws into the cover.

5-2. MCM300, mechanism unit (without IC controller)

① Turn off the power of host computer and the Reader/writer.
② Set up the DIP switches.

The function of the DIP Switches(DSW) is as follows.

No.	Function	OFF	ON	Default
1	Always set to ON State			ON
2	Always set to ON State *1			ON
	Setting International Characters *2	Code #437	Code #850	
3	Baud rate	See the table below		ON
4	Baud rate	See the table below		ON
5	Stop bits	2 bits	1 bit	ON
6	Parity	Odd	Even	ON
7	Parity	Valid	Invalid	ON
8	Character length	7 bits	8 bits	ON

*1 This is applied for all model except US/EC version.
*2 This is applied only for US/EC version.

3	4	Baud rate
OFF	ON	2400
ON	OFF	4800
ON	ON	9600
OFF	OFF	19200

6 PROTOCOL

6-1 Communication Procedure

Basic procedure of communication is as follows.

Connected device		MCP/MCM 300
Send Command	→	Receive Command
Receive ACK	←	Send ACK
		Command processing
Receive response	←	Send response
Send ACK	→	Receive ACK

6-2 Command / Response transfer format

Command transfer format

STX	Command	Data	ETX	BCC

Response transfer format

STX	Command	Status	Data	ETX	BCC

BCC is exclusive OR between command and ETX.

6-3 Transmission Control Characters

Character	Code	Function
STX	02h	Start of Text
ETX	03h	End of Text
ACK	06h	Acknowledge
NAK	15h	Negative Acknowledge
DLE	10h	Data Link Escape
LF	0Ah	Line Feed (for Human Readable Area Print)
BCC	-	Block Check Character

6-4 8 bit Code Characters

6-4-1. For Korean Market(KR type)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	à	§		0	@	P	`	p
1			!	1	A	Q	a	q	è	ß	!	1	A	Q	a	q
2			"	2	B	R	b	r	ù	Æ	"	2	B	R	b	r
3			#	3	C	S	c	s	ò	æ	#	3	C	S	c	s
4			$	4	D	T	d	t	ì	Ø	$	4	D	T	d	t
5			%	5	E	U	e	u	°	ø	%	5	E	U	e	u
6			&	6	F	V	f	v	£	¨	&	6	F	V	f	v
7			'	7	G	W	g	w	¡	Ä	'	7	G	W	g	w
8			(	8	H	X	h	x	¿	Ö	(	8	H	X	h	x
9			)	9	I	Y	i	y	Ñ	Ü	)	9	I	Y	i	y
A			*	:	J	Z	j	z	ñ	ä	*	:	J	Z	j	z
B			+	;	K	[	k	{	¤	ö	+	;	K	[	k	{
C			,	<	L	\	l	¦	Ł	ü	,	<	L	\	l	¦
D			-	=	M	₩	m	}	Á	É	-	=	M	]	m	}
E			.	>	N	^	n	~	å	é	.	>	N	^	n	~
F			/	?	O	_	o	〈DEL〉	ç	¥	/	?	O	_	o	

6-4-2. Code Page 437 for EU Market(US/UK/EC type)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	à	§		0	@	P	`	p
1			!	1	A	Q	a	q	è	ß	!	1	A	Q	a	q
2			"	2	B	R	b	r	ù	Æ	"	2	B	R	b	r
3			#	3	C	S	c	s	ò	æ	#	3	C	S	c	s
4			$	4	D	T	d	t	ì	Ø	$	4	D	T	d	t
5			%	5	E	U	e	u	°	ø	%	5	E	U	e	u
6			&	6	F	V	f	v	£	¨	&	6	F	V	f	v
7			'	7	G	W	g	w	¡	Ä	'	7	G	W	g	w
8			(	8	H	X	h	x	¿	Ö	(	8	H	X	h	x
9			)	9	I	Y	i	y	Ñ	Ü	)	9	I	Y	i	y
A			*	:	J	Z	j	z	ñ	ä	*	:	J	Z	j	z
B			+	;	K	[	k	{	¤	ö	+	;	K	[	k	{
C			,	<	L	\	l	¦	Ŗ	ü	,	<	L	\	l	¦
D			−	=	M	]	m	}	Á	É	−	=	M	]	m	}
E			.	>	N	^	n	~	å	é	.	>	N	^	n	~
F			/	?	O	_	o	〈DEL〉	ç	¥	/	?	O	_	o	

6-4-3. Code Page 850 for EU Market(US/UK/EC type)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	▒	└	ð	Ó	−
1			!	1	A	Q	a	q	ü	æ	í	▒	┴	Ð	ß	±
2			"	2	B	R	b	r	é	Æ	ó	▒	┬	Ê	Ô	=
3			#	3	C	S	c	s	â	ô	ú	│	├	Ë	Ò	¾
4			$	4	D	T	d	t	ä	ö	ñ	┤	─	È	õ	¶
5			%	5	E	U	e	u	à	ò	Ñ	Á	┼	ı	Õ	§
6			&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7			'	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8			(	8	H	X	h	x	ê	ÿ	¿	©	╚	Ï	Þ	°
9			)	9	I	Y	i	y	ë	Ö	®	╣	╔	┘	Ú	¨
A			*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Û	•
B			+	;	K	[	k	{	ï	ø	½	╗	╦	█	Ù	¹
C			,	<	L	\	l	¦	î	£	¼	╝	╠	▄	ý	³
D			−	=	M	]	m	}	ì	Ø	¡	¢	=	¦	Ý	²
E			.	>	N	^	n	~	Ä	×	«	¥	╬	Ì	¯	■
F			/	?	O	_	o	⟨DEL⟩	Å	ƒ	»	┐	¤	■	´	

6-5 Command and Status Lists

Code	Contents
21h	ISO 1st track Read → Hold Card
22h	ISO 2nd track Read → Hold Card
23h	ISO 3rd track Read → Hold Card
29h	ISO 1st track Buffer Read → Hold Card
2Ah	ISO 2nd track Buffer Read → Hold Card
2Bh	ISO 3rd track Buffer Read → Hold Card
40h	Print (16 dot font, 2 lines) → Eject Card
41h	Print (16 dot font, 3 lines) → Eject Card
43h	Print (24 dot font, 2 lines) → Eject Card
44h	Print (12 dot font, 2 lines) → Eject Card
45h	Print (12 dot font, 3 lines) → Eject Card
48h	Print (Hanguel Character 16 dot font, 2 lines) → Eject Card
49h	Print (Hanguel Character 16 dot font, 3 lines) → Eject Card
4Bh	Print (Hanguel Character 24 dot font, 2 lines) → Eject Card
80h	IC Card Mount
83h	IC Card Dismount/Stand by
84h	IC Card Communication (8k-bit card)
85h	IC Card Communication (2k-bit card)
86h	IC Card Block Write (8 k-bit card)
87h	IC Card Block Write (2 k-bit card)
50h	Eject Card
51h	IC Contact → Hold Card
52h	Cleaning → Hold Card
58h	Request ROM Information
5Ah	LED/Buzzer Control
5Fh	Initialize Hardware

For the available command set according to the model type, refer to the following details of commans information.

Consult your manufacturer to check the applicable IC chip manufacturer and model name.

Contents of the statuses are as follows.

Code	Contents
20h	Normal
21h	Magnetic Stripe Read Error, IC Read/Write Error
23h	Card Feed Error

6-6 Details of command
6-6-1 Commands for magnetic stripe

(1) ISO 1st track Read → Hold Card

MCM310X/MCM310R/MCP310TD/MCP310RD

This command reads the 1st track, decodes 2nd and 3rd track on the ISO magnetic stripe, then holds the card.

Decoded data is stored in the buffer and is available with the buffer-reading commands.

Command format

STX	21h	ETX	BCC

Response format

STX	21h	Status	Data	ETX	BCC

(2) ISO 2nd track Read → Hold Card

MCM310X/MCM310R/MCP310TD/MCP310RD

This command reads the 2nd track, decodes 1st and 3rd track on the ISO magnetic stripe, then holds the card.

Decoded data is stored in the buffer and is available with the buffer-reading commands.

Command format

STX	22h	ETX	BCC

Response format

STX	22h	Status	Data	ETX	BCC

(3) ISO 3rd track Read → Hold Card

MCM310X/MCM310R/MCP310TD/MCP310RD

This command reads the 3rd track, decodes 1st and 2nd track on the ISO magnetic stripe, then holds the card.

Decoded data is stored in the buffer and is available with the buffer-reading commands.

Command format

STX	23h	ETX	BCC

Response format

STX	23h	Status	Data	ETX	BCC

(4) ISO 1st track Buffer Read → Hold Card

MCM310X/MCM310R/MCP310TD/MCP310RD

This command reads the 1st track, decodes 2nd and 3rd track on the ISO magnetic stripe, then holds the card.

However, when 1st track data is already in the buffer, it doesn't go read the 1st track, but use the data in the buffer.

Command format

STX	29h	ETX	BCC

Response format

STX	29h	Status	Data	ETX	BCC

(5) ISO 2nd track Buffer Read → Hold Card

MCM310X/MCM310R/MCP310TD/MCP310RD

This command reads the 2nd track, decodes 1st and 3rd track on the ISO magnetic stripe, then holds the card.

However, when 2nd track data is already in the buffer, it doesn't go read the 2nd track, but use the data in the buffer.

Command format

STX	2Ah	ETX	BCC

Response format

STX	2Ah	Status	Data	ETX	BCC

(6) ISO 3rd track Buffer Read → Hold Card

MCM310X/MCM310R/MCP310TD/MCP310RD

This command reads the 3rd track, decodes 1st and 2nd track on the ISO magnetic stripe, then holds the card.

However, when 3rd track data is already in the buffer, it doesn't go read the 3rd track, but use the in the buffer.

Command format

STX	2Bh	ETX	BCC

Response format

STX	2Bh	Status	Data	ETX	BCC

6-6-2 Commands for printing on the human readable area

<Note>

When printing on the human readable area, double check that you are inserting the card in the right direction. Otherwise the data in the magnetic stripe will be destroyed.

(1) Print (16 dot font, 2 lines) → Eject Card All Model

This command prints 2 lines of characters in 16 dot font on the human readable area, then ejects the card.

Command format

STX	40h	Data	ETX	BCC

Response format

STX	40h	Status	ETX	BCC

(2) Print (16 dot font, 3 lines) → Eject Card All Model

This command prints 3 lines of characters in 16 dot font on the human readable area, then ejects the card.

Command format

STX	41h	Data	ETX	BCC

Response format

STX	41h	Status	ETX	BCC

(3) Print (24 dot font, 2 lines) → Eject Card All Model

This command prints 2 lines of characters in 24 dot font on the human readable area, then ejects the card.

Command format

STX	43h	Data	ETX	BCC

Response format

STX	43h	Status	ETX	BCC

(4) Print (12 dot font, 2 lines) → Eject Card All Model

This command prints 2 lines of characters in 12 dot font on the human readable area, then ejects the card.

Command format

STX	44h	Data	ETX	BCC

Response format

STX	44h	Status	ETX	BCC

(5) Print (12 dot font, 3 lines) → Eject Card All Model

This command prints 3 lines of characters in 12 dot font on the human readable area, then ejects the card.

Command format

STX	45h	Data	ETX	BCC

Response format

STX	45h	Status	ETX	BCC

(6) Print (Hanguel Character 16 dot font, 2 lines) → Eject Card

KR type (for Korean market) only

This command prints 2 lines of Hanguel characters in 16 dot font on the human readable area, then ejects the card.

Command format

STX	48h	Data	ETX	BCC

Response format

STX	48h	Status	ETX	BCC

(7) Print (Hanguel Character 16 dot font, 3 lines) → Eject Card

KR type(for Korean market) only

This command prints 3 lines of Hanguel characters in 16 dot font on the human readable area, then ejects the card.

Command format

STX	49h	Data	ETX	BCC

Response format

STX	49h	Status	ETX	BCC

(8) Print (Hanguel Character 24 dot font, 2 lines) → Eject Card

KR type(for Korean market) only

This command prints 2 lines of Hanguel characters in 24 dot font on the human readable area, then ejects the card.

Command format

STX	4Bh	Data	ETX	BCC

Response format

STX	4Bh	Status	ETX	BCC

6-6-3 Commands for IC card **MCP310TD/MCP390TD**

<Note>

These commands are only to communicate with specified IC chip card and the further IC card commands are regarded as confidential.

Please contact your card manufacturer to receive further information.

(1) IC Card Mount

This command transfers the card to the IC contact and activates the card.

The data line shows Answer To Reset (ATR) data.

Command format

STX	80h	ETX	BCC

Response format

STX	80h	Status	Data	ETX	BCC

(2)IC Card Dismount/Stand by

This command deactivates the card.

Command format

STX	83h	ETX	BCC

Response format

STX	83h	Status	ETX	BCC

(3) IC Card Communication (8K bit card)

This command sends specific IC commands to IC card. The commands depend on IC card specification.

The command data line has to be the 6 bytes data line, with Byte-1 through Byte-3 of the IC card commands characterized.

To send the read command, please put the number of data bytes in to Byte-3.

When failing to write data (such as writing the same data), status returns an error.

Refer to the IC card specification for detailed information

Command format

STX	84h	Command data	ETX	BCC

Response format

STX	84h	Status	Data	ETX	BCC

(4)IC Card Communication (2K bit card)

This command sends specific IC commands to IC card. The commands depend on IC card specification.

The command data line has to be the 6 bytes data line, with Byte-1 through Byte-3 of IC card commands characterized.

To send read command, please put the number of data bytes in to Byte-3.

When failing to write data (such as writing the same data), status returns an error.

Refer to the IC card specification for detailed information

Command format

STX	85h	Command data	ETX	BCC

Response format

STX	85h	Status	Data	ETX	BCC

(5) IC Card Block Write (8K bit card)

This command writes all data on the data line at once.

Address 1 shows the top of write start position. Address 2 shows the bottom of write start position.

Data is written from the write start position with the "Write / Erase without Protect Bit" command.

The maximum data amount which is wiritten at one time is 255 bytes.

After writing, the data is verified.

Command format

STX	86h	Address 1	Address 2	Data line	ETX	BCC

Response format

STX	86h	Status	ETX	BCC

(6) IC Card Block Write (2K bit card)

This command writes all data on the data line at once.

Data is written from the write start position with "Update Main Memory" command.

After writing, the data is verified.

Command format

STX	87h	Address	Data line	ETX	BCC

Response format

STX	87h	Status	ETX	BCC

6-6-4 Other Commands

(1) Eject Card

This command ejects the card.

Command format

STX	50h	ETX	BCC

Response format

STX	50h	Status	ETX	BCC

(2) IC Contact → Hold Card MCM310X/MCM390X

This command feeds the card to the IC contact, then holds the card. The command is for mechanism type only.

Command format

STX	51h	ETX	BCC

Response format

STX	51h	Status	ETX	BCC

(3) Cleaning → Hold Card

This command executes the cleaning cycle with the cleaning card, then holds the card.

Command format

STX	52h	ETX	BCC

Response format

STX	52h	Status	ETX	BCC

(4) Request ROM Information

This command requests the ROM information such as product type, version No. etc.

Command format

STX	58h	ETX	BCC

Response format

STX	58h	Status	ROM information	ETX	BCC

(5) LED / Buzzer Control MCP310TD/MCP390TD/MCP310RD

This command controls the LED / Buzzer settings.

Command format

STX	5Ah	Data	ETX	BCC

Response format

STX	5Ah	Status	ETX	BCC

The data is composed of the following five bytes.

Data train	Contents
1st byte	Ready-LED setting data
2nd byte	OK-LED setting data
3rd byte	Error-LED setting data
4th byte	Always 20h
5th byte	Buzzer setting data

Code	Function
20H	No function change
30H	OFF
31H	ON
32H	Blink
33H	Blink once
34H	Blink 3 times

(6) Initialize Hardware

This command initializes the hardware.

Command format

STX	5Fh	ETX	BCC

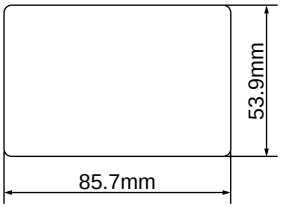
Response format

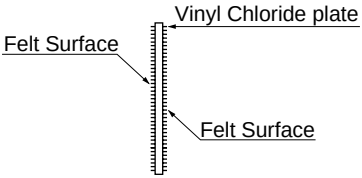
STX	5Fh	Status	ETX	BCC

7 HOW TO USE CLEANING CARD

Periodical cleaning is essential for maintaining the MCP300 series' performance level. Two cleaning cards and one bottle of cleaning liquid are supplied in the enclosed plastic bag for cleaning of the magnetic head.

(1) Dimensions of cleaning card





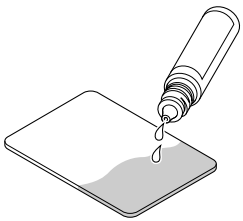
(2) Frequency of cleaning

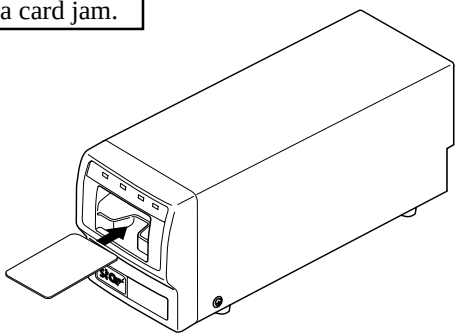
1. Under normal conditions, clean magnetic head once a week or every 2,000 times.
2. Clean the rollers and IC contacts head in the event of an error.

(3) How to use

1. Issue the cleaning command to place the reader/writer in the waiting card state.
2. Apply a penetration of the cleaning liquid to the felt surface of the both sides of cleaning card.
3. Insert the cleaning card from the card slot.
4. Allow the system approximately 1 minute for drying.
5. Ethel alcohol solvent may also be applied for cleaning. Then do not mix with the cleaning liquid.

Important!
Do not use a bent cleaning card.
Bent cards will cause a card jam.





8 TROUBLESHOOTING

Difficulties when the power is turned on

<table>
<tr><th colspan="2">Symptom</th><th>Possible cause</th><th>Remedy</th></tr>
<tr><td rowspan="4">Power LED lamp does not light up.</td><td rowspan="3">Card is not accepted</td><td>Power cable is not properly plugged in.</td><td>Properly plug in power cable</td></tr>
<tr><td>Power cable is broken.</td><td rowspan="4">Consult technical support</td></tr>
<tr><td>Power fuse is blown</td></tr>
<tr><td>Card is accepted</td><td>LED lamp is broken.</td></tr>
<tr><td rowspan="5">Power LED lamp light up.</td><td>Card is not accepted</td><td>Trouble with the main unit</td></tr>
<tr><td rowspan="4">Card is accepted, but main unit does not properly run.</td><td>Card failure
Flaw or bent of card, loss of card data, using other card than Visual card.</td><td>Use applicable card</td></tr>
<tr><td>Stain on head</td><td>Clean the head up with cleaning card</td></tr>
<tr><td>System does not properly run.</td><td rowspan="2">Consult technical support</td></tr>
<tr><td>Trouble with main unit.</td></tr>
</table>

Difficulties during the operation

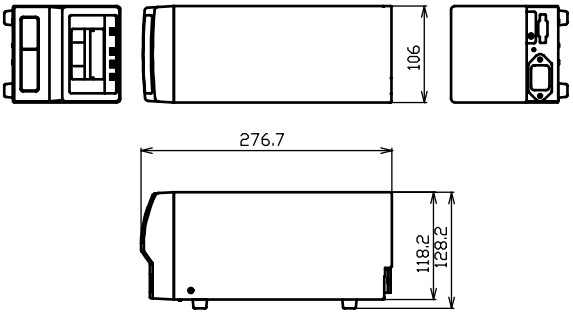
<table>
<tr><th>Symptom</th><th>Possible cause</th><th>Remedy</th></tr>
<tr><td>Card is not ejected.</td><td>Card jamming</td><td>Reset the power</td></tr>
<tr><td rowspan="7">Read/write error</td><td>Card is not applicable</td><td rowspan="2">Use applicable card</td></tr>
<tr><td>Using other card then Visual card</td></tr>
<tr><td>Card data is erased by a magnetized source</td><td rowspan="3">Issue new card</td></tr>
<tr><td>Card is bent</td></tr>
<tr><td>Card has flaws</td></tr>
<tr><td>Head is stained</td><td>Clean the head up with cleaning card</td></tr>
<tr><td>Stain on cord</td><td>Clean the card</td></tr>
<tr><td>Trouble with main unit</td><td>Consult technical support</td></tr>
</table>

9 GENARAL SPECIFICATIONS

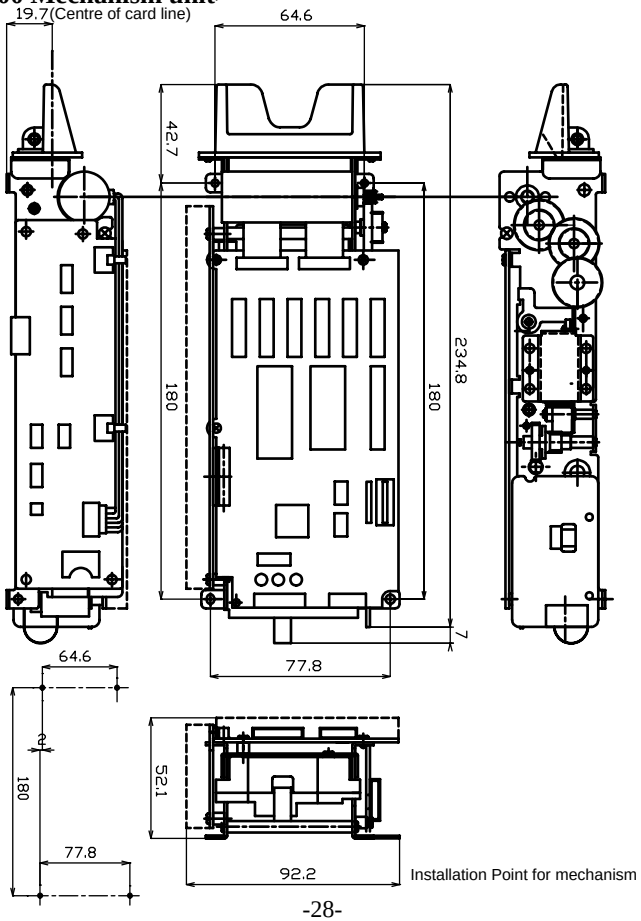
		MCP300 Housed unit	MCM300 Mechanism unit
Card feeding	Driving method	Feed roller	
	Card inserting direction	Face up in one direction	
	Card feed speed	300mm/s (high speed) 140mm/s(low speed)	
Magnetic Recording part	Number of tracks	Track1,Track2,Track3:Read only	
IC recording part	Physical Characteristics	ISO7816/1 compatible	
	Size	ISO7816/2 compatible	
	Signal/protocol	Consult your manufacturer to check the applicable IC chip manufacturer and model name.	Not supported Separate IC controller is required
Printing part	Printed characters	29 characters x 3 lines (12x12 dot font) 22 characters x 3 lines (16x16 dot font) 14 characters x 2 lines (24x24dot font)	
	Character font	Alpha-numeric(standard) Korean Characters, Chinese characters(option)	
	Font configuration	12x12 dot font 16x16 dot font 24x24 dot font	
	Dot pitch	0.29mm Horizontally 0.181mm Vertically	
Environment Condition	Installation place	Indoor use only	
	Operating temperature and humidity	0 to 40°C, 20 to 80%RH (no condensation)	
	Storage temperature and humidity	-30 to 65°C, 20 to 90%RH(no condensation)	
	Vibration resistance	1.5G 10 to 200Hz XYZ direction each 1hr	
Reliability	Unit service life	300,000 times	
	Error rate	1/500(Head cleaning is required according to the operating circumstance)	
Applicable card		Visual card(with magnetic stripe, IC chip)	
Outer case		Provided	Not Provided
Power supply		AC100V to 120V , 50/60Hz or AC220V to 240V , 50/60Hz	DC 5V±5%,3A MAX. DC 24V±10% 1.5A MAX.
Interface		RS-232C	CMOS level serial
Weight		2.5Kg	700g
Dimension		106(W)*128.2(H)*276.7(D)mm	92.2(W)*52.1(H)*234.8(D)mm

9. EXTERNAL VIEW AND DIMENSIONS

<MCP300 Housed unit>



<MCM300 Mechanism unit>



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