

SPECIFICATIONS

MTM-720S-1T-0103

MOTOR DRIVEN
CARD TRANSPORTATION MECHANISM

NEURON CORPORATION

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1 GENERAL

This specification describes the technical characteristics of Neuron motorized card transportation mechanism MTM-720S-1T-0103.

- (1) RS-232 interface
- (2) Strong conveyance force (twice as much as MTM-5xx series)
- (3) Allowable card thickness: 0.20 ~ 0.84 mm
- (4) Low profile
- (5) Extended UART enables communication with an external module
- (6) I/O control mode available

2 SPECIFICATIONS (Card)

- | | |
|-------------------------------------|-------------------|
| (1) Physical characteristics | ISO/IEC 7810 ID-1 |
| (2) Embossing | ISO/IEC 7811-1 |
| (3) Location of embossed characters | ISO/IEC 7811-1 |
| (4) Allowable card thickness | 0.20 ~ 0.84 mm |

Note.1: Depending on card materials, conditions of card surfaces, etc, there is a possibility that cards with thickness 0.20 ~ 0.25mm can not be carried normally.

- | | |
|----------------------------------|--|
| (5) Card warpage | Max. 2 mm (Including the card thickness) |
| (6) Optical transmission density | 1.5 or more |

3 SPECIFICATIONS (Unit)

- | | |
|--------------------------------|---|
| (1) Card conveyance method | DC motor and Rubber roller |
| (2) Card speed | 300 mm/s ± 20 mm/s |
| (3) Insert direction | Front and Rear |
| (4) Detection of card position | Optical detection by Photo interrupter
(5 positions) |

4 ENVIRONMENTAL CHARACTERISTICS

- | | |
|--------------------------------------|--|
| (1) Temperature and Humidity | 0 ~ 50°C, 20 ~ 80 % RH (without condensation) |
| (2) Storage Temperature and Humidity | - 20 ~ 70°C, 20 ~ 80 % RH (without condensation) |
| (3) Location for use | Indoor with 1,000 Lx or less |

5 ENDURANCE

- (1) Temperature and Humidity Durability
40 ± 3°C, 90 ~ 95 % RH, 96 h
- (2) Vibration Durability
Amplitude 2mm, 10 ~ 50 Hz/min, 15 min, X, Y, Z directions
- (3) Shock Durability
294 m/s², 11 ms, one time only, X, Y, Z directions
- (4) Life 500,000 passes or more

Note.2: Standard condition: 20 ± 5°C, 35 ~ 60 % RH. Indoor use.
(will be shorter at dusty condition)

6 PHYSICAL SPECIFICATIONS

- (1) Mounting position Horizontal mounting in principle
- (2) Appearance, form Refer to [15 APPEARANCE] (page 10)
- (3) Mass Approx. 280g

7 Control mode

7.1 Mode Type

- (1) Normal mode: Standard MTM-720S control mode using RS-232 commands.
- (2) I/O control mode: Control the card transportation with signals via I/O port.

7.2 Mode Select

I/O Control mode is selectable by DIP switch 7 on the main PCB at the bottom of the unit.

The setting becomes effective when restart the unit the setting is as follows.

- (1) Normal mode

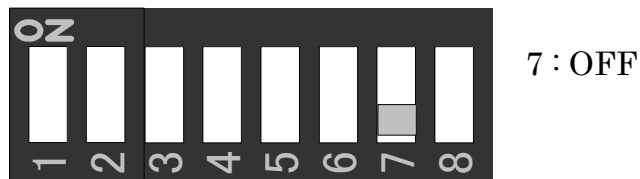


Fig. 1 DIP switch setting for Normal mode

- (2) I/O control mode

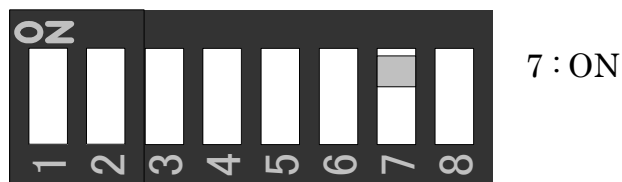


Fig. 2 DIP switch setting for I/O control mode

8 CONNECTOR

8.1 Power Connector

- (1) Connector J1 FI-W7P-HF (JAE)
- (2) Pin Assignment

Table 1 Pin Assignment table (Power Connector)

Pin No.	Signal	I/O	Contents
1 ~ 3	Vcc	I	Voltage (+12Vdc)
4	FG	-	FG
5 ~ 7	GND	-	Ground

It is strongly recommended to connect FG (MTM) to FG (System) with low-impedance cable.

8.2 Communication Connector

- (1) Connector J11 FI-W11P-HF (JAE)
- (2) Pin Assignment

Table 2 Pin Assignment table (Communication Connector)

Pin No.	Signal	I/O	Contents
1	TxD	O	Transmitted Data
2	RxD	I	Received Data
3	RTS	O	Request to Send
4	DTR	O	DTE Ready (Always "High")
5	CTS	I	Clear to Send
6	DSR	I	DCE Ready (Not observed)
7, 8	SG	-	Ground
9	N.C.	-	Not Connected
10, 11	FG	-	FG

It is strongly recommended to connect FG (MTM) to FG (System) with low-impedance cable.

8.3 Extended UART Connector

- (1) Connector J14 FI-W17P-HF (JAE)
- (2) Pin Assignment

Table 3 Pin Assignment table (Extended UART Connector)

Pin No.	Signal	I/O	Contents
1	TxD_EX	O	Transmitted Data (To External module)
2	RxD_EX	I	Received Data (From External module)
3~11	-	-	System Reserved
12	+5V	O	Power to External module (300mA max.)
13	SG	-	Ground
14,15	-	-	System Reserved
16,17	N.C.	-	Not Connected

8.4 External Capacitor Connector

- (1) Connector J17 FI-W7P-HF (JAE)
- (2) Pin Assignment

Table 4 Pin Assignment table (External Capacitor Connector)

Pin No.	Signal	I/O	Contents
1, 2	C+	-	Terminal +
3, 4, 5	N.C.	-	Not Connected
6, 7	C-	-	Terminal -

8.5 I/O Control Connector

- (1) Connector J12 FI-W17P-HF (JAE)
- (2) Pin Assignment

Table 5 Pin Assignment table (I/O Control Connector)

Pin No.	Signal	I/O	Contents
1	ALM	O	Alert output Normal:Lo abnormal:Hi
5	BSY	O	Card detection signal Normal: Lo There is a card in unit: Hi
6	C_DET	O	Card detection signal Normal: Lo There is a card at the specified position: Hi
9	F_Eject	I	Front Eject Signal Normal:Lo Keep Hi more than 100ms for front ejection
10	R_Eject	I	Rear Eject Signal Normal:Lo Keep Hi more than 100ms for rear ejection
17	SG	-	Ground

8.6 Connector Position

Refer to [15 APPEARANCE] (page 10)

9 ELECTRICAL CHARACTERISTICS

9.1 Absolute Maximum Rating

Table 6 Absolute Maximum Rating table

Parameter	Symbol	Standrad Value	Units
Power Voltage	V_{CC}	-0.5 ~ +13.2	V
RxD_EX, /F_Eject /R_Eject Input Voltage	V_{UARTin}	-0.5 ~ +5.5	V
TxD_EX, /ALM Output Voltage	$V_{UARTout}$	-0.5 ~ +5.5	V
RxD, CTS, DSR Input Voltage	V_{RSin}	-25.0 ~ +25.0	V
TxD, RTS, DTR Output Voltage	V_{RSout}	-13.2 ~ +13.2	V

Note.3: Exceeding the maximum rating will cause unit to fail permanently.

9.2 DC characteristic

Operational conditions

Power Voltage (Vcc) : 12V ± 5%

Ripple Voltage : 100 mVp-p or less

Table 7 DC characteristic table

Parameter		Symbol	min.	typ.	max.	Units	Conditions
Output "High" Level	TxD, RTS, DTR	V_{OH}	5.0	5.4	-	V	
	TxD_EX, /ALM		4.5				
Output "Low" Level	TxD, RTS, DTR	V_{OL}	-	-5.4	-5.0	V	
	TxD_EX, /ALM				0.4		
Input Threshold "High" Level	RxD, CTS, DSR	V_{ITH}	-	1.8	2.4	V	
Input Threshold "Low" Level	RxD, CTS, DSR	V_{ITL}	0.8	1.5	-	V	
Input "High" Level	RxD_EX, /F_Eject /R_Eject	V_{IH}	2.0	-	5.3	V	
Input "Low" Level	RxD_EX, /F_Eject /R_Eject	V_{IL}	-0.3	-	0.8	V	
Power consumption	Waiting Mode	I_{CC}	-	250	-	mA	
	Card Operation		-	800	950		
	Motor Starting up, Stopping, Reversing		-	1200 (25ms)	1500 (30ms)		
	Shutter Operation		-	700	850		

10 TRANSMISSION

10.1 Between unit and host

- | | |
|---------------------------------|---|
| (1) Electrical Standard | RS-232 (EIA) |
| (2) Baud rate | 9600 bits/s |
| (3) Transmission technique | Asynchronous transmission / half duplex |
| (4) Start bit number | 1 bit |
| (5) Frame Configuration | 8 bits + 1 parity (even) |
| (6) Stop bit number | 1 bit |
| (7) Transmission code | ASCII |
| (8) Transmission data structure | |

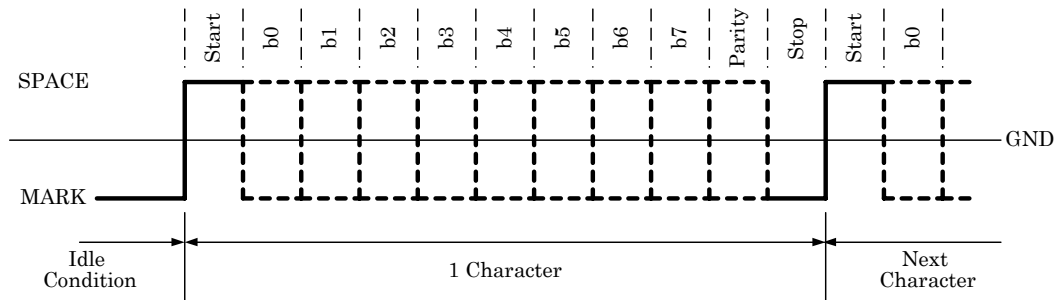


Fig. 3 Transmission data structure

10.2 Between unit and external module

- | | |
|---------------------------------|---|
| (1) Transmission technique | Asynchronous transmission / half duplex |
| (2) Communication setting | Same with between unit and host
(Baud rate, Start bit number, Frame configuration,
and Stop bit number) |
| (3) Transmission code | ASCII |
| (4) Transmission data structure | |

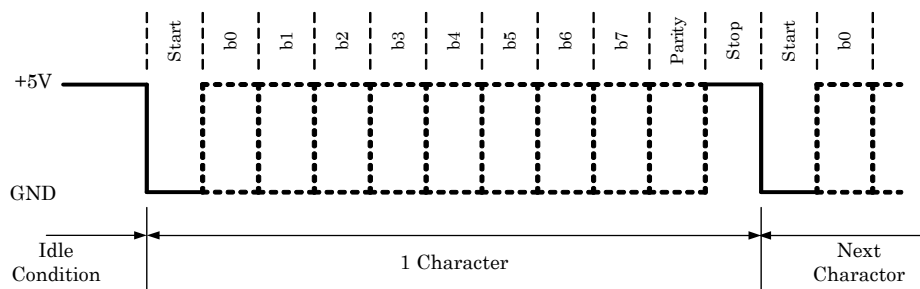


Fig. 4 Transmission data structure

Note.4: Communication setting (Baud rate, Start bit number, Frame configuration, and Stop bit number) must be same with between unit and host.

11 POWER FAILURE

As is indicated on Fig. 5, by connecting capacitor, when power voltage goes low, card is ejected from the front.

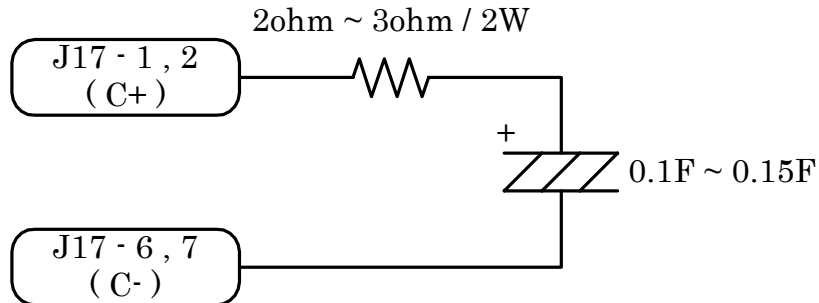


Fig. 5 Connecting Capacitor

Note.5: Full power voltage is present between C+ and C-. Please exercise care when working around circuit.

Note.6: This unit is not designed to install battery between C+ and C-. Please not install battery.

12 CLEANING

Clean the unit when frequent transportation errors are observed.

Using without cleaning may cause permanent deterioration of unit performance or shorten lifetime of the components.

(1) Cleaning card

Roller: WCS-250C25

Note.7: The above cards are wet-type cleaning cards (Ethyl Alcohol: 70 % , Water: 30 %).

Note.8: Wait for about 5 min to dry cleaning liquid before starting operation.

(2) Cleaning method

In a condition of a cleaning card to be held at each rubber roller point, rotate rubber rollers for about 5 to 10 seconds.

Note.9: Do not use a dried cleaning card. Dip it in the cleaning liquid before using.

13 EMC TESTING

EMC approval is obtained as the final system. EMC approval may not be obtained even using all EMC approved components for the system. This product is tested by the following system configuration.

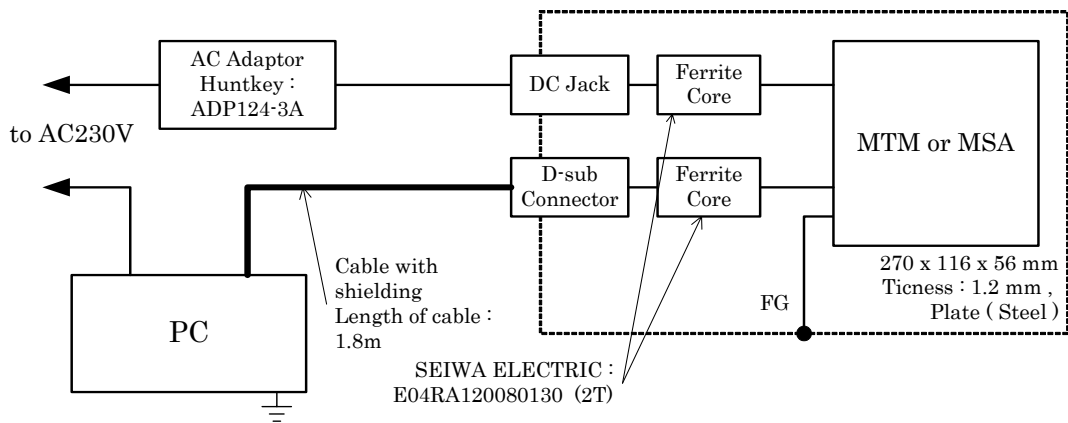


Fig. 6 Example (System)

14 INSTALLATION

Flatness of base plate must be 0.5 mm or less.

15 APPEARANCE

Unit: mm

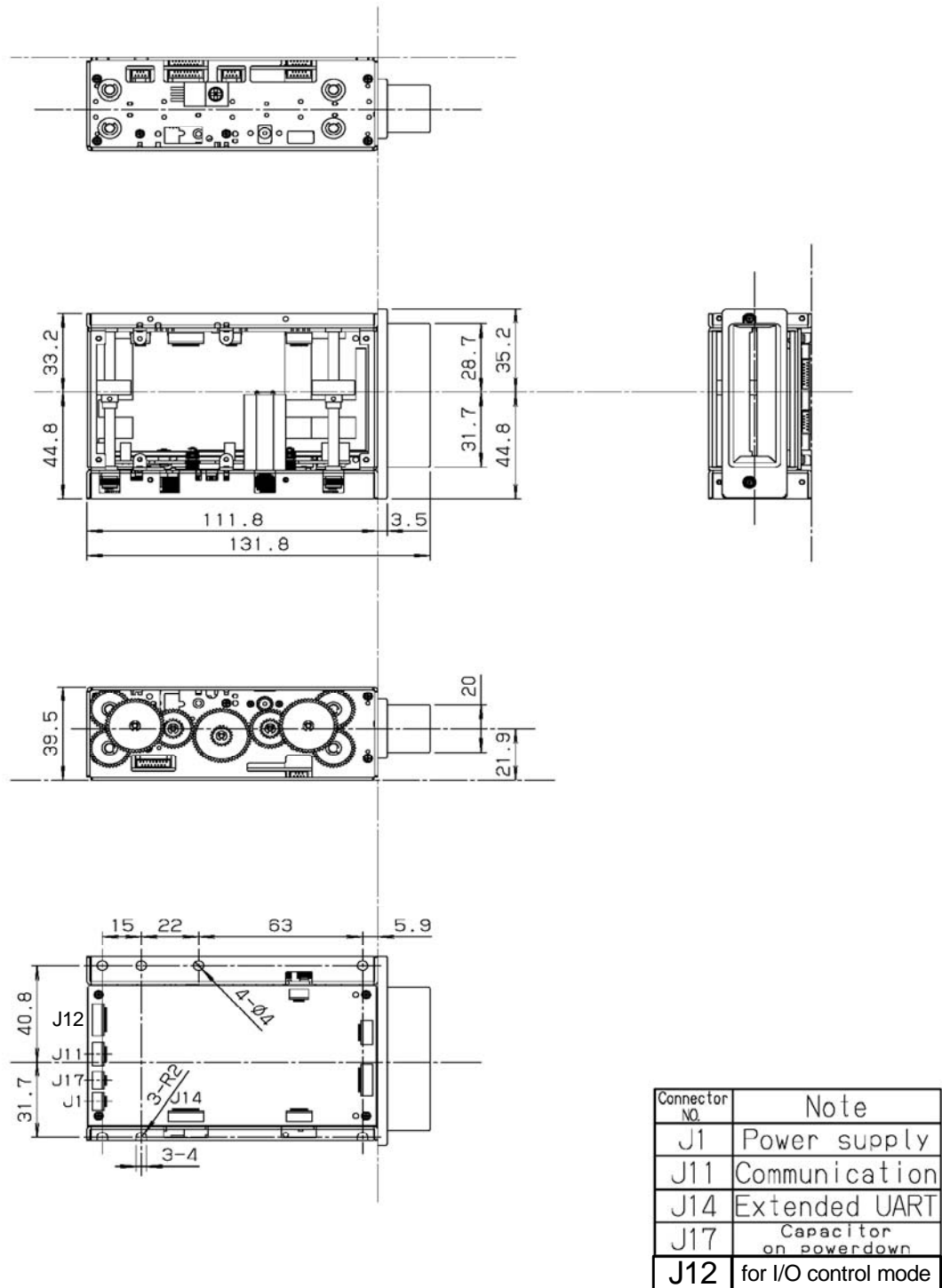


Fig. 7 Appearance

History of Revision

Model: MTM-720S-1T-0103

Remarks:

Rev.	Contents of Revision	Approved	Checked	Prepared
00				
01	1 st . Release			2005-11-24 A.Utsui
02				
03				
04				
05				
06				
07				
08				
09				