Jun.5th'12

# MODULAR TYPE OPTICAL DATA TRANSMISSION DEVICE SPECIFICATIONS (SEMI STANDARD TYPE) (CE MARKING)

## HEAD

DMJ-GB1-Z50(HEAD-ON)
DMJ-HB1-Z50(SIDE-ON)

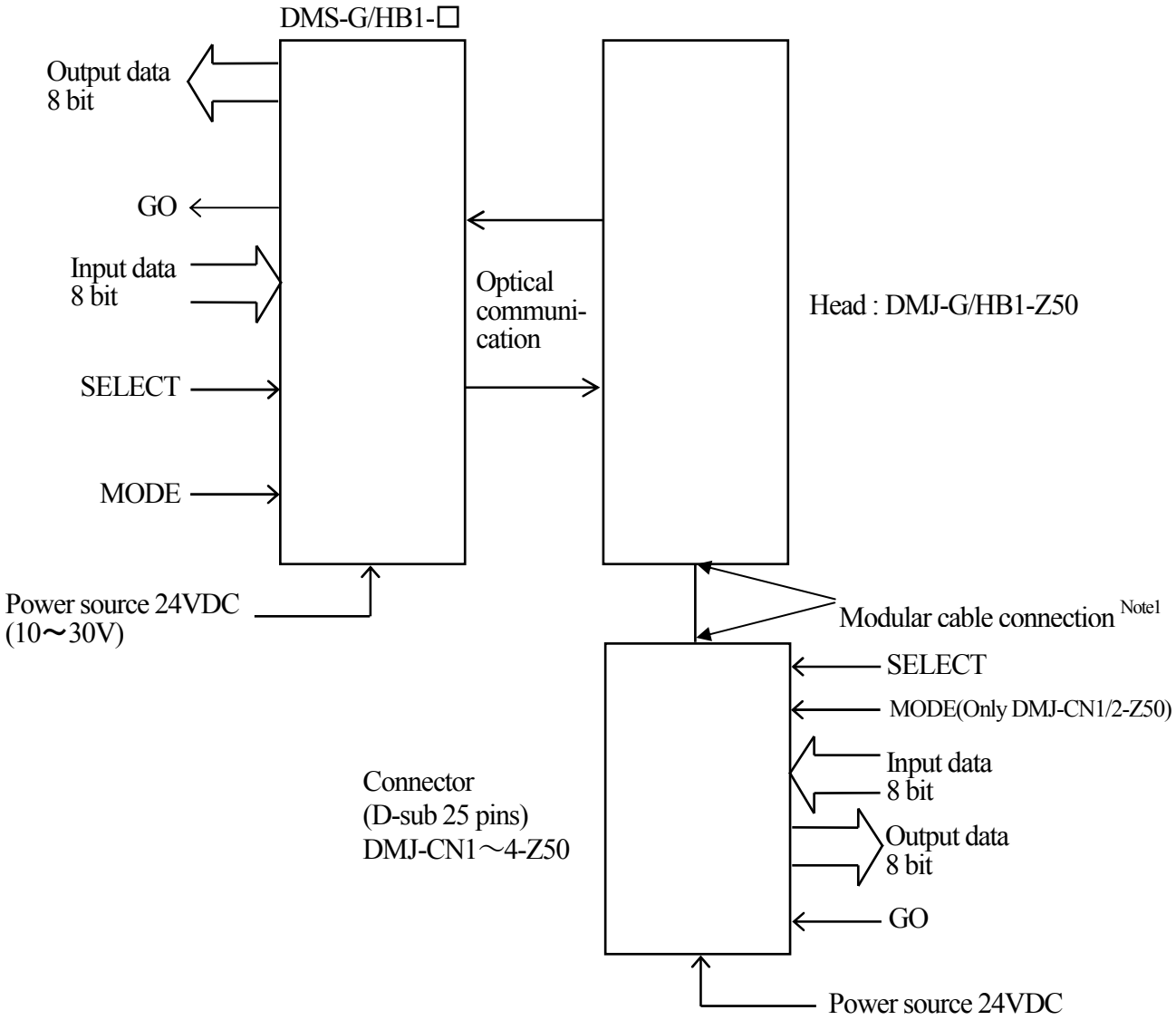
## CONNECTOR

DMJ-CN1-Z50(METRIC SCREW)
DMJ-CN2-Z50(INCH SCREW)
DMJ-CN3-Z50(RECEPTION STANDBY/METRIC SCREW)
DMJ-CN4-Z50(RECEPTION STANDBY/INCH SCREW)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Symbol | Amended reason | | | | Pages | Date | Corrector | Amended No. |
| Approved by | Checked by | Drawn by | Designed by | Title | Modular Type Optical Data Transmission Device DMJ-G/HB1-Z50 Specifications | | | |
| HINO | HINO | HAYASHIYA | HAYASHIYA | Drawing No. | C-42-3919 | | | 1/6 |

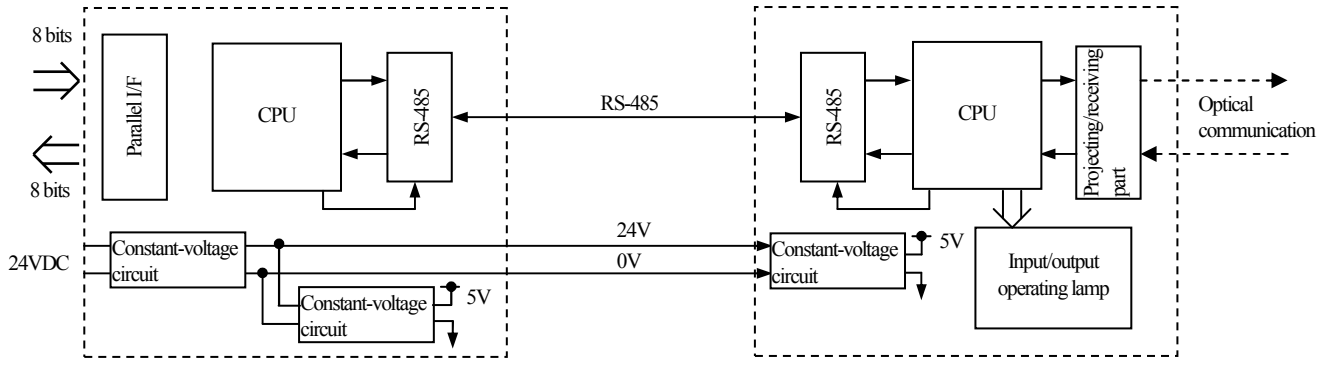
## 1. General

This DMJ series is expanding the variable number of logging data relative to the standard DMJ. Modular cable is applied between a head and a connector of E84 parallel I/O and it is easy to make a wiring at user side. Communicating configuration is as follows:-




Note 1) Make sure not to use the combination with DMJ-G/HB1-Z50 and DMJ-CN1～4, and DMJ-G/HB1 and DMJ-CN11～4-Z50.

## 2. Hardware configuration

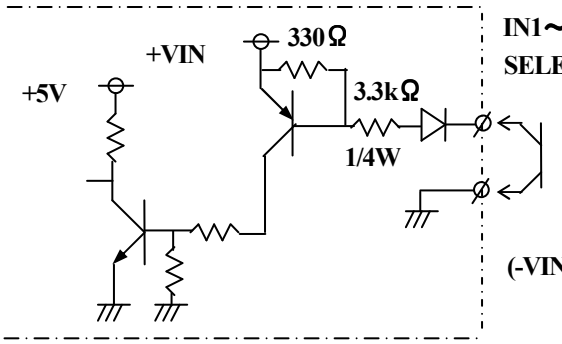
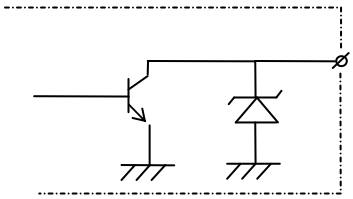



| Title | Modular Type Optical Data Transmission Device DMJ-G/HB1-Z50 Specifications | Drawing No. | C-42-3919 | 2/6 |
|---|---|---|---|---|

**3. Specifications**

| Model No.(Head) | DMJ-GB1-Z50 | DMJ-HB1-Z50 |
|---|---|---|
| Direction | Head-ON | Side-ON |

| Model No. (Connector) | DMJ-CN1-Z50 | DMJ-CN2-Z50 | DMJ-CN3-Z50 | DMJ-CN4-Z50 |
|---|---|---|---|---|
| Mode | Changeover of transmission/reception mode by outer input | Changeover of transmission/reception mode by outer input | Reception standby mode(Fixed) | Reception standby mode(Fixed) |
| Fixed screw | Metric screw | Inch screw | Metric screw | Inch screw |

| | | |
|---|---|---|
| Transmitting distance | 1.0m(It can be changed by adjuster) | |
| Directional angle | 30° (Full angle) | |
| Transmitting capacity(I/O) | 8 bits/8 bits | |
| Transmitting system | Half-duplex two-way transmission system | |
| Transmitting time | 45msec | |
| Power source | 24VDC | |
| Current consumption | 100mA max. | |
| Ambient illuminance | 4,000lx or less | |
| Ambient temperature/ humidity | -10～50℃/85%RH or less | |
| Vibration resistance | Double amplitude 1.5mm, 10～55Hz, Each 2 hour in X, Y and Z directions | |
| Impact resistance | 500m/s$^2$ Each 10 time in X, Y and Z directions | |
| Connection | D-sub 25 pins connector | |
| Protective structure | IP40 | |
| Input IN1～IN8, SELECT, MODE |  ON current 2.5mA or more<br>OFF current 1mA or less<br>(Operating threshold current 1.5 to 2mA) | |
| Output, OUT1～OUT8, GO |  NPN open-collector output<br>VCE30V or less<br>IC50mA or less<br>Residual voltage 1.8V or less | |
| Optical communication part | Modulating system | Pulse modulation |
| | Detecting system | Parity check, All output is getting OFF when twice continuous error |

| | | |
|---|---|---|
| Specifications between a head and a connector | Communicating standard | RS-485 |
| | Communicating speed | 38.4kbps |
| | Detecting system | Parity check/SUM check |
| | Connection | RJ-11(Modular jack) |
| Max. extending length | 200m* | |

* Modular cable should be the connector with 6-Pole 4-core(6P4C) and AWG26, straight.

**4. Logging data processing**

(1) This device memorizes transmission/reception data, GO, SELECT and invariable time of reception data in non-volatile storage in all time by using changes of transmission/reception data, SELECT input and GO output as trigger. Note 2)

(2) Communication logging specifications

| | | |
|---|---|---|
| Data variable time | Max. 1600 times Note 3) | |
| Memorizing data | Transmitting/receiving data : Each 8 bits, GO output, SELECT input | |
| Measuring unit of invariable time | 0.05sec | |
| Measuring error of invariable time | ±0.05sec | |
| Measuring range of invariable time | Max. 1638.35sec(Approx. 27min.) Note 4) | |
| Memorizing media | Ferroelectric memory(8K byte) | |
| Memorizing cycle | Min. 20msec | |
| Memorizing life | Nos. | $10^{10}$ times |
| | Years | 20 years |

Note 2) Transmitting/receiving data is monitored and memorized. It may be different with input/output data.

Note 3) In case that data variable Nos. exceed max. value, it is overwritten from older data.

Note 4) In case that measuring of invariable data for transmitting/receiving data exceeds max. value, it is memorized as max. value.

**5. Transmission characteristics**

(1) Characteristics data Unit(msec)

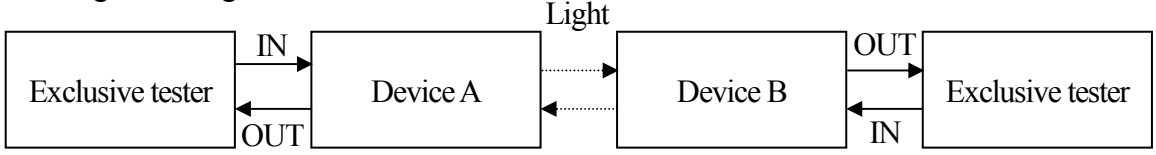
| Items | Symbols | MIN | MAX |
|---|---|---|---|
| Input data holding time | tIH | 30 | - |
| Transmission time | tON, tOFF | 13 | 45 |
| Transmission starting delay time (Against optical axis coincidence) | tSD | 30 | 120 |
| Output holding time(Against SELECT A) | tOH1 | 80 | 120 |
| Output holding time(Against SELECT B) | tOH2 | - | 25 |
| Output holding time(Against light-interruption) | tOH3 | 80 | 120 |

(2) Characteristics measuring condition

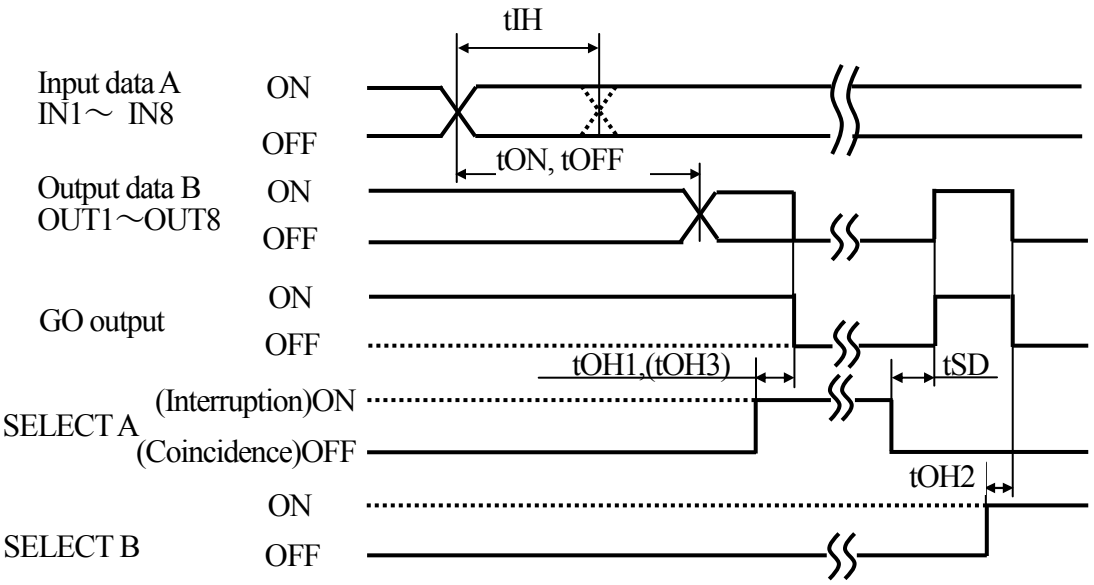
*Mode : Side A – Reception standby mode, Side B – Transmission standby mode

*It was measured under input(side A) and output(side B).

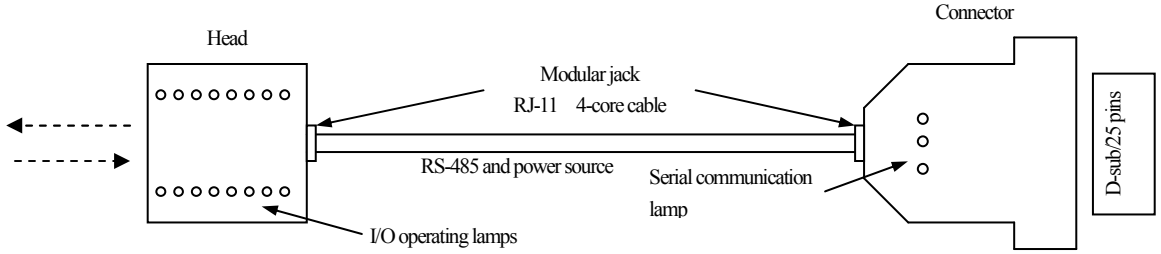
(3) Measuring block diagram



(4) Transmission timing



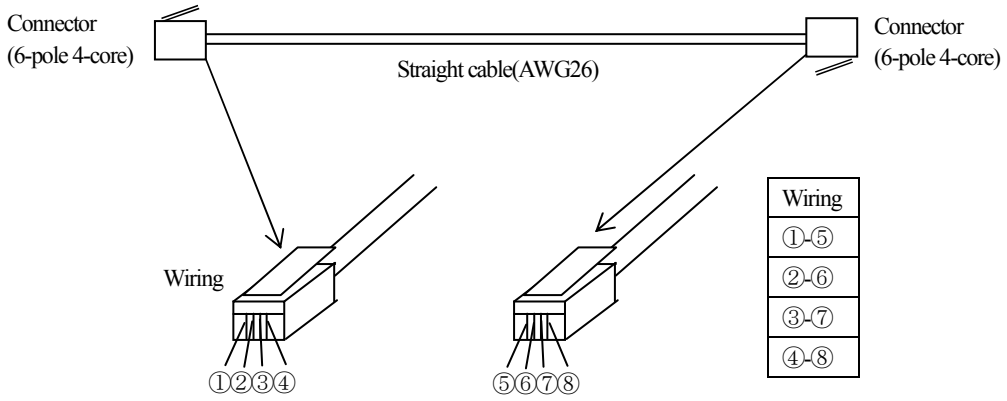

## 6. Appearance and connection




| Pin No. | Functions | Pin No. | Functions |
|---|---|---|---|
| 1 | IN1 | 14 | OUT1 |
| 2 | IN2 | 15 | OUT2 |
| 3 | IN3 | 16 | OUT3 |
| 4 | IN4 | 17 | OUT4 |
| 5 | IN5 | 18 | OUT5 |
| 6 | IN6 | 19 | OUT6 |
| 7 | IN7 | 20 | OUT7 |
| 8 | IN8 | 21 | OUT8 |
| 9 | NC | 22 | +VIN |
| 10 | SELECT | 23 | +VIN |
| 11 | MODE | 24 | -VIN |
| 12 | GO | 25 | COM |
| 13 | NC | | |

* It is short-circuited between pin No.22 and No.23.
* It is short-circuited between –VIN(Pin No.24) and COM(Pin No.25) inside.
* Mode is available only for DMJ-CN1/2-Z50.

Wiring diagram




**7. Functions for each terminal**

| Terminals | Functions | |
|---|---|---|
| IN1～IN 8 | Input data | |
| OUT1～OUT8 | Output data | |
| SELECT | It is shorted to COM : Stop to communicate<br>It is opened : Possible to communicate | |
| MODE<br>(Only for DMJ-CN1/2) | It is opened : Transmission priority mode<br>It is shorted to COM : Reception standby mode | |
| GO | ON when receiving normal data<br>OFF when interrupting the beam | |
| COM | Common for input/output | |
| +VIN | +24V(±10%) | Power source input |
| -VIN | 0V | |

Note) Make sure to set one side to reception stand-by mode.

**8. Operating lamps**

| | |
|---|---|
| Head | Each parallel I/O is shown. I/O is the same indication as standard device(8-bit type)<br>IN : 8 points, OUT : 8 points, GO, POW, NS<br>NS : Lights up when serial communication with connector is normal. |
| Connector | NS : Lights up when serial communication with head is normal.<br>MODE : Lights up when reception-standby mode<br>POW : Lights up when putting power source in |