Nov.22nd'02

OPTICAL DATA TRANSMISSION DEVICE WITH LOGGING FUNCTION SPECIFICATIONS

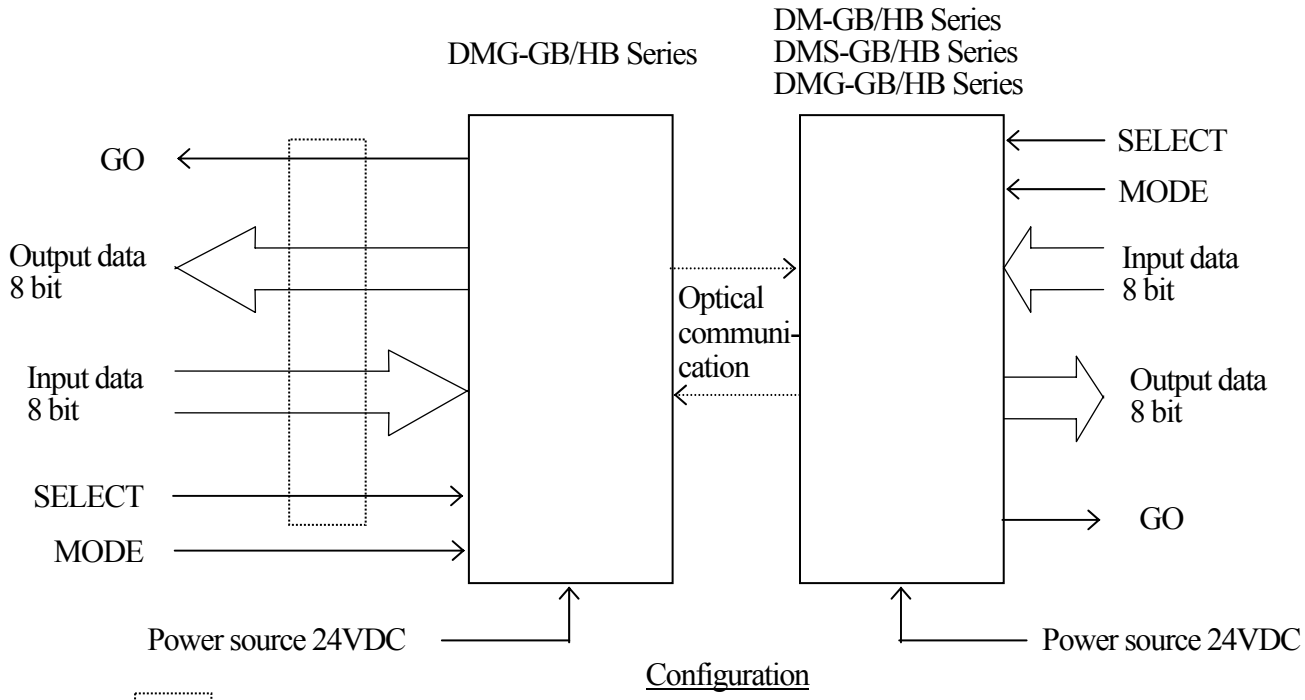
DMG-GB2
DMG-HB2

Corresponding to SI unit

Symbol	Amended reason			Pages	Date	Corrector	Amended No.
Approved by	Checked by	Drawn by	Designed by	Title	Optical Data Transmission Device With Logging function DMG-GB2/HB2 Specifications		
MUGIKURA	KITADA	HOSHINO	HOSHINO	Drawing No.	C-42-3210		1/7

1. General

This is an optical data transmission device with 8 bits parallel I/O. This device provides with I/O data memorized function(Logging function) and so this function is very helpful to analyze when troubles such as interlocking etc. happened. Also, this device is compatible with standard models, DMS-HB1/GB1 series under the circumstances such as optical communication, input/output and installation and so it is easy to replace them at the current facilities.



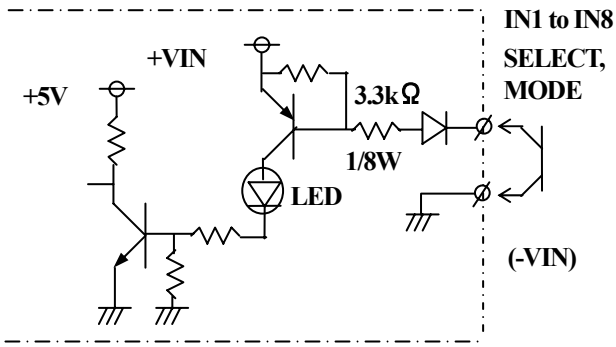
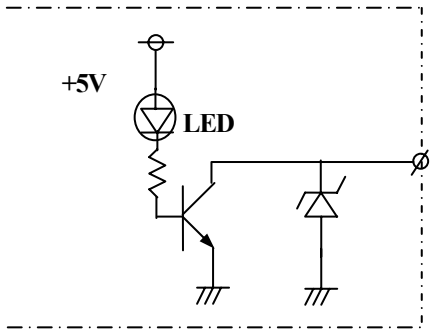
Configuration

Monitoring I/O data and logging data

* Refer to page 5 or later about logging functions.

2. Specifications

Model No.	DMG-GB2	DMG-HB2
Transmission distance	0 to 3m(With projecting amount adjuster)	
Directive angle	10 degrees(Full angle)	
Transmission directions	HEAD-ON	SIDE-ON
Transmission capacity (Input/Output)	8 bit/8 bit	
Transmission method	Half-duplex two-way transmission	
Transmission time	40msec	
Modulation method	Pulse modulation	
Verification method	Parity check	
Power source	10 to 30VDC(24VDC is recommended)	
Current consumption	100mA Max.	
Ambient illuminance	4,000lux or less	
Ambient temperature/ Humidity	-10 to 50 degrees C / 85%RH or less(Not condensing)	
Vibration resistance	Double amplitude 1.5mm, 10 to 55Hz, Each 2 hour in X, Y and Z directions	
Impact resistance	$490m/s^2$ Each 10 time in X, Y and Z directions	
Connection	Cable type($0.2mm^2$, 22-core shield cable)	
Protective structure	IP64	

Input IN1 to IN8, SELECT, MODE	 ON current 2.5mA or more OFF current 1mA or less (Operation threshold current 1.5 to 2mA)
Output, OUT1 to OUT8, GO	 NPN open-collector output VCE30V or less IC50mA or less Residual voltage 1.8V or less

3. 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 1)

(2) Communication logging specifications

Data variable time	Max. 100 times Note 2)	
Memorizing data	Transmission/reception 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 3)	
Memorizing media	Ferroelectric memory(512 byte)	
Memorizing cycle	Min. 20msec	
Memorizing life	Nos.	10^{10} times
	Years	10 years

Note 1) Transmission/reception data is monitored and memorized. It may be different with input/output data.

Note 2) In case that data variable Nos. exceed max. value, it is overwritten from older data.

Note 3) In case that measuring of invariable data for transmission/reception data exceeds max. value, it is memorized as max. value.

4. Transmission characteristics

(1) Characteristics data

Unit(msec)

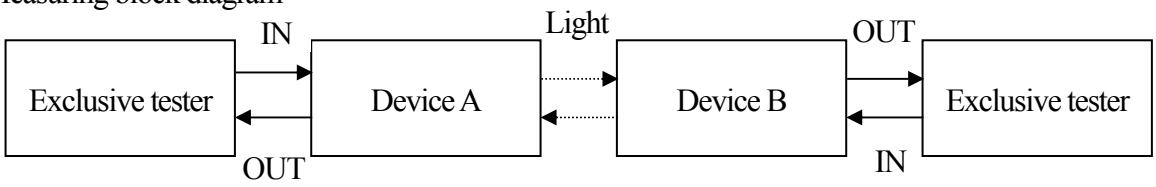
Items	Symbols	MIN	MAX
Input data holding time	tIH	30	-
Transmission time	tON, tOFF	13	40
Transmission starting delay time (Against optical axis coincidence)	tSD	30	110
Output holding time(Against SELECT A)	tOH1	50	90
Output holding time(Against SELECT B)	tOH2	-	5
Output holding time(Against light-interruption)	tOH3	50	90

(2) Characteristics measuring condition

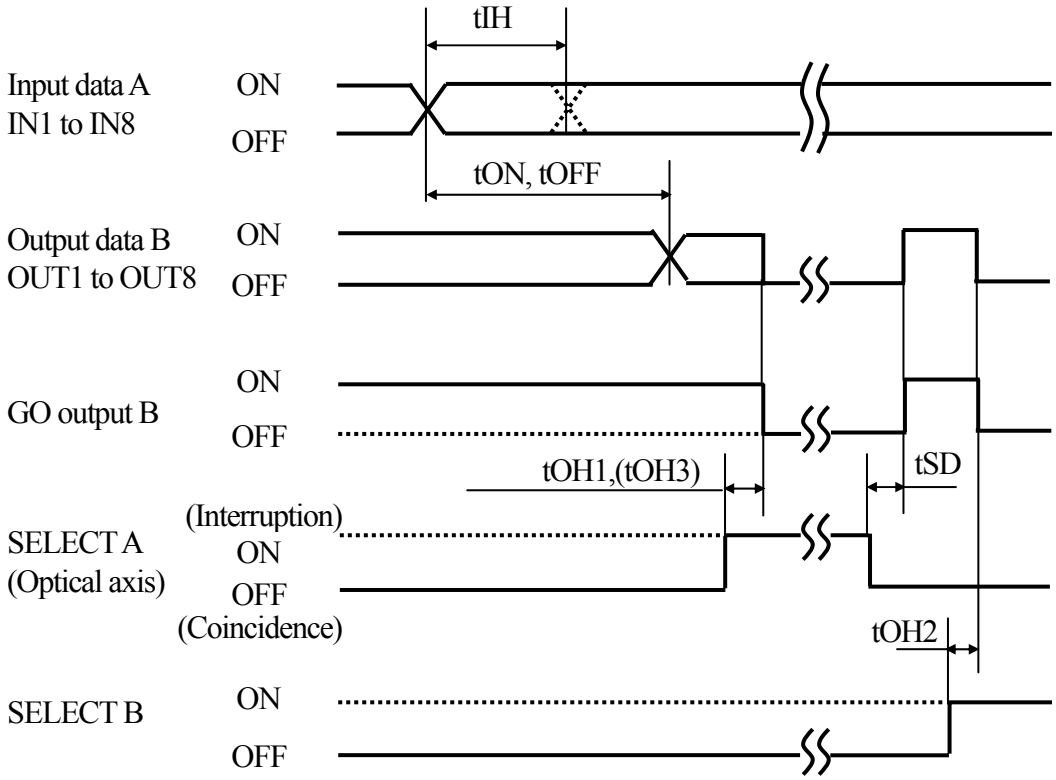
*Mode : Side A – Reception stand-by mode, Side B – Transmission stand-by mode

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

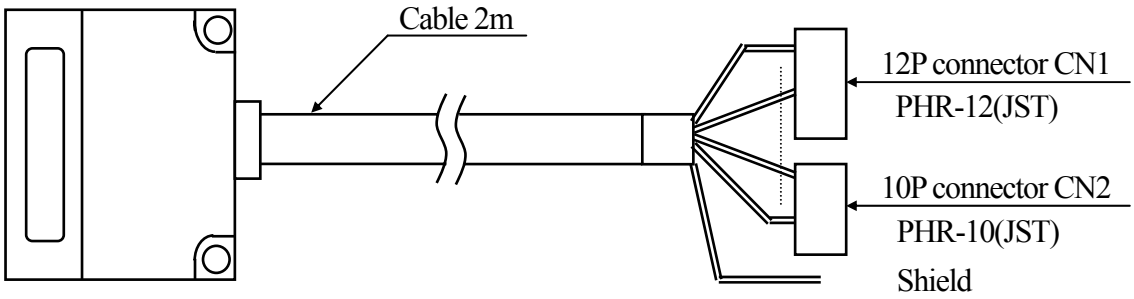
(3) Measuring block diagram



(4) Transmission timing



5. External wiring



Colors	Pin No.	Functions
Brown	CN1-5	IN1
Red	CN1-7	IN2
Orange	CN1-9	IN3
Yellow	CN1-11	IN4
Green	CN2-1	IN5
Blue	CN2-3	IN6
Purple	CN2-5	IN7
Gray	CN2-7	IN8
White	CN1-3	SELECT
Pink	CN1-2	MODE
Brown/black	CN1-6	OUT1
Red/Black	CN1-8	OUT2

Colors	Pin No.	Functions
Orange/Black	CN1-10	OUT3
Yellow/Black	CN1-12	OUT4
Green/Black	CN2-2	OUT5
Blue/Black	CN2-4	OUT6
Purple/Black	CN2-6	OUT7
Gray/Black	CN2-8	OUT8
White/Black	CN1-4	GO
Pale blue	CN1-1	COM
Pink/Black	CN2-9	+VIN
Pale blue/Black	CN2-10	-VIN

Shield wire	Shield

* It is shorted between COM and –VIN inside. Shield cable is opened inside.

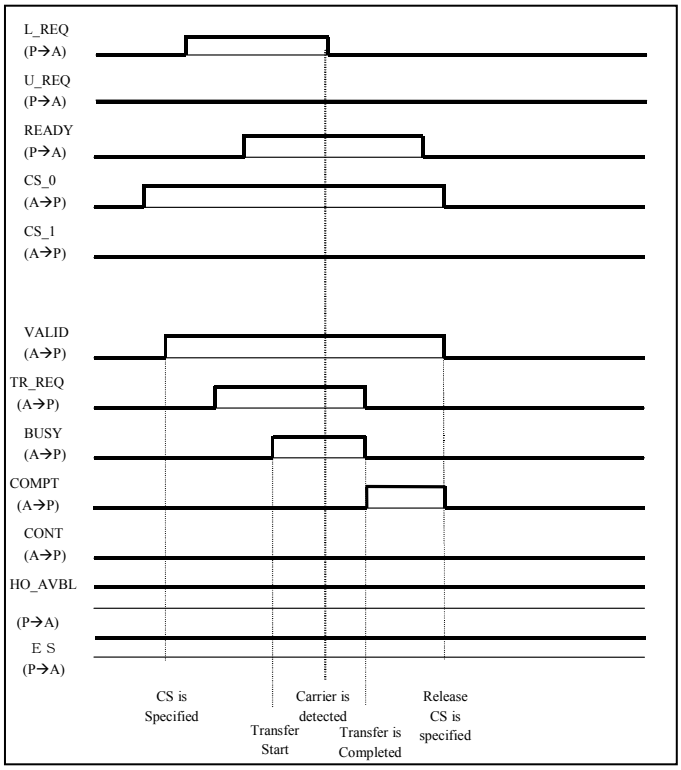
6. Function for each terminal

Terminals	Functions	
IN1 to IN 8	Input data	
OUT1 to OUT8	Output data	
SELECT	It is shorted to COM : Transmission/reception is stopped and logging data can't be read out. It is opened : Transmission/reception is operated and logging data can be read out.	
MODE	It is opened : Transmission standby mode It is shorted to COM : Reception standby mode	
GO	It is ON when normal data was received and OFF when light was interrupted or reception error.	
COM	Common for input/output	
+VIN	+24VDC(10 to 30V)	Power source
-VIN	0V	

Note) Make sure to set other one to reception standby mode.

7. Logging function of communication data

Logging function means to memorize both transmission/reception and variable time between Active equipment (A) and Passive Equipment(P) in a lump at all time when ordinary sequence will be made. Accordingly, the following sequence data(Time chart) can be memorized:-

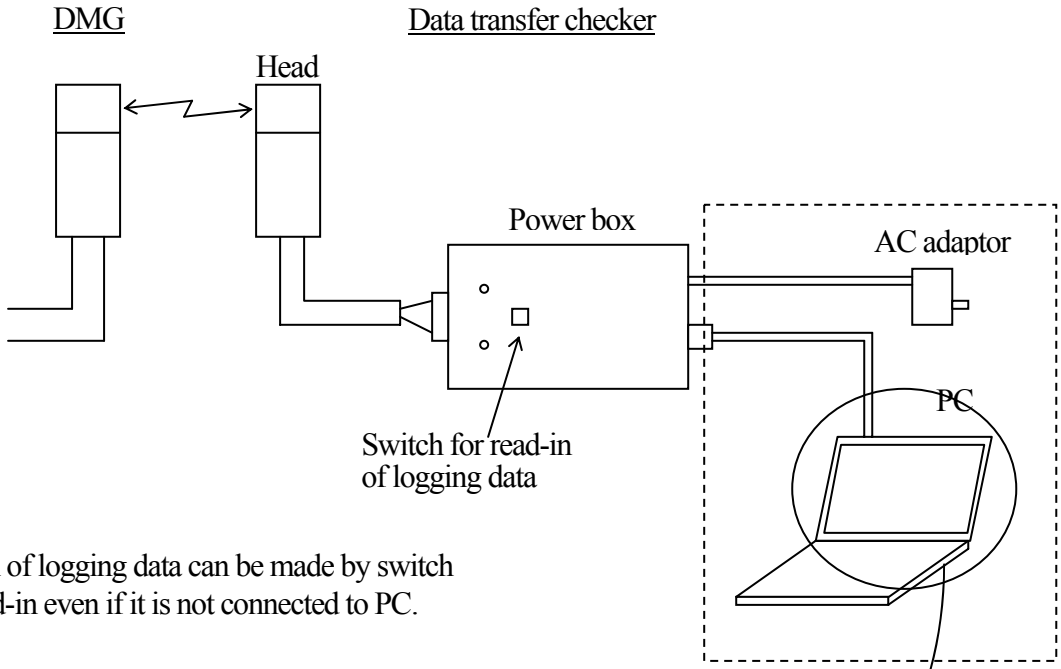


Single Time Diagram for Single Handoff(LOAD)

8. How to read out logging data

When some troubles such as interlocking etc. happened, you can read out memorized data with data transfer checker(Optical remote controller, option) and show them on PC with exclusive application software. It is easy to read out without removing cover because of reading out by optical communication. It is made by facing the head of data transfer checker(Optical remote controller) to transmission/reception part of DMG. However, when read out, make sure to be active status by releasing SELECT input(Opened or +VIN).
(Refer to the specifications sheet of data transfer checker in details.)

Structure



Read-in of logging data can be made by switch
For read-in even if it is not connected to PC.

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