SPECIFICATIONS

DM 4 BIT TYPE
COMMUNICATION COMPATIBLE DEVICE
FOR MAINTENANCE

DMS-GA1-C(HEAD-ON)
DMS-HA1-C(SIDE-ON)

Approved by | Checked by | Drawn by | Designed by | Title
-------------|------------|---------|-------------|------------------
MAEJIMA      | KAMITANI   | OJIMA   | OJIMA       | DM 4 Bit Type Communication Compatible Device
             |            |         |             | DMS-GA1/HA1-C Specifications

Drawing No. | C-42-3257 | Pages | 1/5
1. Configuration

2. Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>DMS-GA1-C</th>
<th>DMS-HA1-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission distance</td>
<td>0 to 0.6m(Changeable by adjuster)</td>
<td></td>
</tr>
<tr>
<td>Directive angle</td>
<td>30 degrees(Full angle)</td>
<td></td>
</tr>
<tr>
<td>Transmission directions</td>
<td>HEAD-ON</td>
<td>SIDE-ON</td>
</tr>
<tr>
<td>Transmission capacity (Input/Output)</td>
<td>4 bit/4 bit</td>
<td></td>
</tr>
<tr>
<td>Transmission method</td>
<td>Half-duplex two-way transmission</td>
<td></td>
</tr>
<tr>
<td>Transmission time</td>
<td>100msec</td>
<td></td>
</tr>
<tr>
<td>Modulation method</td>
<td>Pulse modulation</td>
<td></td>
</tr>
<tr>
<td>Verification method</td>
<td>Double continuous coincident detection</td>
<td></td>
</tr>
<tr>
<td>Power source</td>
<td>18 to 30VDC</td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>100mA Max.</td>
<td></td>
</tr>
<tr>
<td>Ambient illuminance</td>
<td>4,000lux or less</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature/humidity</td>
<td>-10 to 50 degrees C / 85%RH or less</td>
<td></td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>Double amplitude 1.5mm, 10 to 30Hz, Each 2 hour in X, Y and Z directions</td>
<td></td>
</tr>
<tr>
<td>Impact resistance</td>
<td>500m/s²</td>
<td>Each 10 time in X, Y and Z directions</td>
</tr>
<tr>
<td>Connection</td>
<td>Cable type(0.2mm², 15-core shield cable, 2m long)</td>
<td></td>
</tr>
<tr>
<td>Protective structure</td>
<td>IP64</td>
<td></td>
</tr>
</tbody>
</table>
3. Transmission characteristics

(1) Characteristics data

<table>
<thead>
<tr>
<th>Items</th>
<th>Symbols</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input data holding time</td>
<td>tIH</td>
<td>80</td>
<td>-</td>
</tr>
<tr>
<td>Transmission time</td>
<td>tON, tOFF</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Transmission starting delay time (Against optical axis coincidence)</td>
<td>tSD</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>Output holding time (Against SELECT A)</td>
<td>tOH1</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>Output holding time (Against SELECT B)</td>
<td>tOH2</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>Output holding time (Against light-interruption)</td>
<td>tOH3</td>
<td>50</td>
<td>60</td>
</tr>
</tbody>
</table>

(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

*1. 2-wire sensor isn’t available.
(4) Transmission timing

Input data A
IN1 to IN4
ON
OFF

Output data B
OUT1 to OUT4
ON
OFF

GO output B
ON
OFF

tOH1, (tOH3)

tSD

SELECT A
(Optical axis)
          (Interruption)
ON
OFF

SELECT B
(Coincidence)
ON
OFF

4. External wiring

Cable 2m
15P connector
PHR-15(JST)
Shield
Colors | Pin No. | Functions  
--- | --- | ---  
Black | 1 | IN1  
Brown | 2 | IN2  
Red | 3 | IN3  
Orange | 4 | IN4  
White/yellow | 5 | MODE  
Yellow | 6 | SELECT  
White/blue | 7 | NC  
Green | 8 | OUT1  
Blue | 9 | OUT2  
Purple | 10 | OUT3  
Gray | 11 | OUT4  
White | 12 | GO  
Yellow/green | 13 | COM(0V)  
Yellow/red | 14 | +VIN  
Yellow/black | 15 | -VIN(0V)  
Shield | | Shield  

(Note) No.13 is connected to No.15 inside.

5. Function for each terminal

| Terminals | Functions  
--- | ---  
IN1 to IN 4 | Input data  
OUT1 to OUT4 | Output data  
SELECT | It is shorted to COM : Transmission/reception is stopped  
| It is opened : Transmission/reception is operated  
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  
COM | Common for input/output  
| +VIN | +24V(10 to 30V)  
| -VIN | 0V  

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

6. Difference between DM-GA1/HA1 and this type

This new type is basically the same specifications as DM-GA1/HA1 regarding optical communication and it is possible to communicate. However, pay attention of the following points:-

a) External dimension is the same as DMS series and it is different from DM-GA1/HA1.

b) Input part becomes pulse oscillating state because a current flows by inner processing only when input reads-in.

c) Cable with white/blue is not connected.(It isn't connected to COM(0V))

d) It can adjust communicating distance with light-projecting adjuster.(This isn't sensitivity adjuster)