SPECIFICATIONS
FOR

PRODUCT NAME : Automatically small horizontal vibration detection switch
TYPE NAME : D 7 A - 2

ISSUED : S. Iwamura  April 21, 1999
CHECKED : F. Mori  April 22, 1999
APPROVED : A. Ishii  April 22, 1999

OMRON Corporation
1. Mechanism parameter
   (1) Dimensions
       DRWG. No. 6421443-2

   (2) Structure
       The contact of the built-in switch is mechanically opened and close by the vibration of the
       earthquake wave and it is the mechanism which takes out the signal.

   (3) Protection structure
       The switch is assumed to be IP40.

   (4) Set sensitivity
       90-170 cm/s² (Gal) (Depend on the horizontal, continuous excitation method of 0.3, 0.5, and
       0.7 cycle seconds).
       The above-mentioned sensitivity is a value by which it is set to operate by the earth quake
       waves (80-250 cm/s²).

   (5) Return mechanism
       Automatic return type

   (6) Installation level allowance value
       The installation level allowance value of the device which builds in this item while
       installed normal is assumed ± 5 degrees or less.

   (7) Point of contact form
       Excite horizontally and turn ON in the range of set sensitivity.

   (8) The horizontal return time
       Time from the fixation of the device which builds in this item in the installation level
       allowance value to the normal return of the switch circuit is made within 20 seconds.
       (However, 10°C or more)

   (9) Circuit return time
       Time until the switch circuit returns original after the vibration stops is made within
       one minute.

   (10) Installation method
        Please install this item on the PCB(t=1.6mm).
        (See right picture.)

   (11) Soldering
        Dip soldering: temperature 270°C 4sec MAX.
        Soldering iron: temperature 350±10°C 3sec MAX.

2. Electric specification
   (1) Electric ratings
       DC3V, 5μA~DC3V, 1mA

   (2) Insulation resistance
       100MΩ or more (DC250V Megger).
       Between each terminal and earth terminal, between the same pole terminals.
(3) Dielectric strength
AC250V, 50/60Hz 1 minute (between each terminal and earth between the same pole terminals).

(4) Contact resistance
Below initial 1Ω (terminal)

3. Mechanical specification
(1) Transportation vibration
Satisfy an initial value after exciting in half amplitude 2.5mm, the vibration frequency 10Hz. and the direction of three axes for 20 minutes or more.

(2) Endurance impact
Do not provide the obstacle as a function after impressing the acceleration of 980m/s² in the direction of three axes continuousness three times.

(3) Transportation impact
Satisfy an initial value after 1 corner, 3 arrises, 3 surfaces and 7 times in total are dropped from the height of 60cm to a concrete side freely while packed.

(4) Terminal strength
Satisfy an initial value after impressing the load of 9.8N in the direction of compression for one minute.

4. Environmental performance
(1) Use surroundings temperatures -30~70°C (However, there must be neither be dewy nor freezing)

(2) Use surroundings humidity. 25~95%RH.

(3) Preservation surroundings temperatures -40~70°C (However, there must be neither be dewy nor freezing)

(4) Preservation surroundings humidity. 25~95%RH.

5. Business-proof Business
(1) Salt-fog test
Do not generate rust on corrosion and externals remarkable depending on the salt-fog test which builds in and provides for the meter of the gas to JIS Z 2371 after testing for 100 hours.
Insulation resistance: 5MΩ or more.
Dielectric strength: AC250V 1 minute (50/60Hz).
However, measures under the dry state after the examination ends.

(2) Wetproothing
Do not provide the obstacle as a function after leaving for continuousness 96 hour in atmosphere of 40±2°C and 90~99%RH.
Insulation resistance 10MΩ or more.
However, measures under the dry state after the examination ends.

(3) Heat-humidity cycle
Do not provide the obstacle as a function by 10 cycles at each heat-humidity of showing in Figure 2 of regulations of the check of the meter of the gas.
Insulation resistance 10MΩ or more.
Moreover, do not expose the final cycle in the state of the low temperature.
However, measures under the dry state after the examination ends.
(4) High temperature leaving
   Do not provide the obstacle as a function after leaving in the constant temperature tank of
   70±2°C for 96 hours.

(5) Heatproof impact
   Do not provide the obstacle as a function after leaving for 10 cycles. (one cycle: -30°C 30
   minutes → +70°C, 30 minutes).

(6) Electrical service life
   Do not provide the obstacle as a function after 10,000 operations under the rated load of
   3VDC 1mA at a frequency of 10 to 20 operations per minute.
   Insulation resistance: 10MΩ or more.

(7) Corrosive gas
   H₂S5±1ppm, 40°C and 65%RH and leaving for 96 hours.
   The contact resistance after examining is assumed to be 1kΩ or less.

Note 1. Among the judgment standards, the meaning of 'Satisfy an initial value' is as follows.

   ① Operation characteristic operates by 90-170 cm/s' (0.3, 0.5, and 0.7 cycle seconds).
   ② Contact resistance Below 1Ω.
   ③ Insulation resistance 100MΩ or more.
   ④ Dielectric strength AC250V 50/60Hz: 1 minute.

   Moreover, the meaning of 'Do not provide the obstacle as function' is as follows.
   ① Operation characteristic Operate by 80-250 cm/s' (0.3, 0.5, and 0.7 cycle seconds).
   ② Contact resistance Below 100Ω.
   ③ Insulation resistance 100MΩ or more.
   ④ Dielectric strength AC250V 50/60Hz: 1 minute.

Note 2. Guaranteed term and range of guarantee

(1) Guaranteed term
   It will be assumed one year after the commodity is delivered.

(2) Range of guarantee
   Only when the breakdown is caused during the above-mentioned guaranteed term by the
   responsibility of our company, the breakdown part of this commodity is exchanged or is
   repaired.
   The guarantee is a guarantee of the delivery goods units and pardon expenditure (work
   pay and damage amends, etc.) because of the exchange work, please.

Note 3. The terms of validity of this specifications
   One year after the day of issue.
   If we have not had any orders for one year, we will make this specifications invalid.

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OMRON
Inspecting regulations for microcomputer

Figure 2

Temperature

+65°C

+24°C

-10°C

1.5h  4h  2.5h  1.5h  4h  2.5h  1.5h  3h  1.5h  1.5h

Humidity

90%

80%

0%

1 cycle 24h
Omron:
D7A-3