

# 水銀リードリレー 水銀リードスイッチ

Mercury Reed Relays  
and  
Mercury Reed Switches

サークルインタナショナル株式会社

## インテグリッドPCボード型

### Pシリーズ

PDA1A ~ PDA5A  
ドライ 1A ~ 5A

PDA1C ~ PDA3C  
ドライ 1C ~ 3C

PDH1A ~ PDH5A  
高耐圧 1A ~ 5A

PDV1A ~ PDV5A  
ハイパワー 1A ~ 5A

新シリーズPMR1A ~ PMR5A  
ウエット 1A ~ 5A

PMG1C ~ PMG3C  
ウエット 1C ~ 3C



#### 接点仕様

| コンタクトタイプ      | 定格<br>[W]max | 切断電圧<br>[VDC]max | 切断電流<br>[A]max | 通電電流<br>[A]max | 初期接触抵抗<br>[ $\Omega$ ]max | 耐電圧<br>[VDC] | 動作/復旧時間<br>[ms]max | 寿命<br>機械的[回]      |
|---------------|--------------|------------------|----------------|----------------|---------------------------|--------------|--------------------|-------------------|
| ドライ 1A ~ 5A   | 10           | 100              | 0.5            | 1              | 150                       | 200          | 1.0/0.1            | 1X10 <sup>8</sup> |
| 高耐圧 1A ~ 5A   | 10           | 1000<br>(但し1mA)  | 0.5            | 1              | 200                       | 1500         | 1.0/0.1            | 1X10 <sup>8</sup> |
| ハイパワー 1A ~ 5A | 50           | 200              | 1              | 2              | 200                       | 300          | 1.0/0.1            | 1X10 <sup>8</sup> |
| ドライ 1C ~ 3C   | 3            | 30               | 0.2            | 0.5            | 200                       | 200          | 1.5/2.0            | 5X10 <sup>7</sup> |
| ウエット 1A ~ 5A  | 50           | 500              | 1              | 2              | 100                       | 1000         | 2.5/2.0            | 1X10 <sup>9</sup> |
| ウエット 1C ~ 3C  | 50           | 500              | 1              | 2              | 100                       | 1000         | 3.0/3.0            | 1X10 <sup>9</sup> |

#### 一般仕様

| リレータイプ      | 絶縁抵抗<br>[ $\Omega$ ]min | 絶縁耐電圧<br>[VDC]min     | 使用温度範囲<br>[ $^{\circ}$ C] |
|-------------|-------------------------|-----------------------|---------------------------|
| PDA 1A ~ 5A | 1X10 <sup>10</sup>      | 500<br>(接点間を除く)       | -20 ~ +60                 |
| PDH 1A ~ 5A | 1X10 <sup>10</sup>      | 1500<br>(静電シールド付きを除く) | -20 ~ +60                 |
| PDV 1A ~ 5A | 1X10 <sup>10</sup>      | 500<br>(接点間を除く)       | -20 ~ +60                 |
| PDA 1C ~ 3C | 1X10 <sup>9</sup>       | 500<br>(接点間を除く)       | -20 ~ +60                 |
| PMR 1A ~ 5A | 1X10 <sup>10</sup>      | 1000<br>(静電シールド付きを除く) | -20 ~ +60                 |
| PMG 1C ~ 3C | 1X10 <sup>9</sup>       | 1000<br>(静電シールド付きを除く) | -20 ~ +60                 |

#### コイル仕様 (PD1A~5A / PDH1A~5A / PDV1A~5A)

| 接点構成 | 型名   | 定格電圧<br>[VDC] | コイル抵抗<br>[ $\Omega$ ] | 定格電流<br>[mA] | 感動電圧<br>[VDC] | 回路接続図 (TOP VIEW) |
|------|------|---------------|-----------------------|--------------|---------------|------------------|
| 1A   | 1A05 | 5             | 500                   | 10           | 3.8           |                  |
|      | 1A12 | 12            | 1200                  | 10           | 9             |                  |
|      | 1A24 | 24            | 2800                  | 8.6          | 18            |                  |
| 2A   | 2A05 | 5             | 200                   | 25           | 3.8           |                  |
|      | 2A12 | 12            | 800                   | 15           | 9             |                  |
|      | 2A24 | 24            | 3200                  | 7.5          | 18            |                  |
| 3A   | 3A05 | 5             | 100                   | 50           | 3.8           |                  |
|      | 3A12 | 12            | 480                   | 25           | 9             |                  |
|      | 3A24 | 24            | 1900                  | 12.6         | 18            |                  |
| 4A   | 4A05 | 5             | 75                    | 66.7         | 3.8           |                  |
|      | 4A12 | 12            | 300                   | 40           | 9             |                  |
|      | 4A24 | 24            | 1200                  | 20           | 18            |                  |
| 5A   | 5A05 | 5             | 50                    | 100          | 3.8           |                  |
|      | 5A12 | 12            | 240                   | 50           | 9             |                  |
|      | 5A24 | 24            | 960                   | 25           | 18            |                  |

\* 20 の値を示し、コイル抵抗値の許容偏差は10%とする。

コイル仕様 (PD1C~3C)

| 接点構成 | 型名      | 定格電圧 [VDC] | コイル抵抗 [Ω] | 定格電流 [mA] | 感動電圧 | 回路接続図 (TOP VIEW) |
|------|---------|------------|-----------|-----------|------|------------------|
| 1C   | PDA1C05 | 5          | 200       | 25        | 3.8  |                  |
|      | PDA1C12 | 12         | 800       | 15        | 9    |                  |
|      | PDA1C24 | 24         | 2800      | 8.6       | 18   |                  |
| 2C   | PDA2C05 | 5          | 100       | 50        | 3.8  |                  |
|      | PDA2C12 | 12         | 480       | 25        | 9    |                  |
|      | PDA2C24 | 24         | 1900      | 12.6      | 18   |                  |
| 3C   | PDA3C05 | 5          | 50        | 100       | 3.8  |                  |
|      | PDA3C12 | 12         | 240       | 50        | 9    |                  |
|      | PDA3C24 | 24         | 960       | 25        | 18   |                  |

\* 20 の値を示し、コイル抵抗値の許容偏差は10%とする。

コイル仕様 (PMR1A~5A)

| 接点構成 | 型名      | 定格電圧 [VDC] | コイル抵抗 [Ω] | 定格電流 [mA] | 感動電圧 | 回路接続図 (TOP VIEW) |
|------|---------|------------|-----------|-----------|------|------------------|
| 1A   | PMR1A05 | 5          | 140       | 35.7      | 3.8  |                  |
|      | PMR1A12 | 12         | 800       | 15        | 9    |                  |
|      | PMR1A24 | 24         | 2800      | 8.6       | 18   |                  |
| 2A   | PMR2A05 | 5          | 100       | 50        | 3.8  |                  |
|      | PMR2A12 | 12         | 380       | 31.6      | 9    |                  |
|      | PMR2A24 | 24         | 1500      | 16        | 18   |                  |
| 3A   | PMR3A05 | 5          | 70        | 71.4      | 3.8  |                  |
|      | PMR3A12 | 12         | 300       | 40        | 9    |                  |
|      | PMR3A24 | 24         | 1200      | 20        | 18   |                  |
| 4A   | PMR4A05 | 5          | 50        | 100       | 3.8  |                  |
|      | PMR4A12 | 12         | 200       | 60        | 9    |                  |
|      | PMR4A24 | 24         | 800       | 30        | 18   |                  |
| 5A   | PMR5A05 | 5          | 40        | 125       | 3.8  |                  |
|      | PMR5A12 | 12         | 160       | 75        | 9    |                  |
|      | PMR5A24 | 24         | 640       | 37.5      | 18   |                  |

\* 20 の値を示し、コイル抵抗値の許容偏差は10%とする。

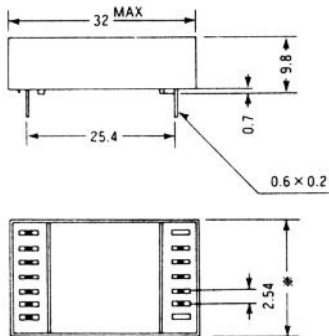
コイル仕様 (PMG1C~3C)

| 接点構成 | 型名      | 定格電圧 [VDC] | コイル抵抗 [Ω] | 定格電流 [mA] | 感動電圧 | 回路接続図 (TOP VIEW) |
|------|---------|------------|-----------|-----------|------|------------------|
| 1C   | PMG1C05 | 5          | 80        | 62.5      | 3.8  |                  |
|      | PMG1C12 | 12         | 400       | 30        | 9    |                  |
|      | PMG1C24 | 24         | 1600      | 15        | 18   |                  |
| 2C   | PMG2C05 | 5          | 70        | 71.4      | 3.8  |                  |
|      | PMG2C12 | 12         | 300       | 40        | 9    |                  |
|      | PMG2C24 | 24         | 1200      | 20        | 18   |                  |
| 3C   | PMG3C05 | 5          | 40        | 125       | 3.8  |                  |
|      | PMG3C12 | 12         | 160       | 75        | 9    |                  |
|      | PMG3C24 | 24         | 640       | 37.5      | 18   |                  |

\* 20 の値を示し、コイル抵抗値の許容偏差は10%とする。

外觀寸法図 (単位:mm)

(ウェットタイプは 取り付けは垂直に対し±30°以内の角度でお使い下さい)



寸法

- 1A.....10.0mm
- 2A.....12.5mm
- 3A.....15.2mm
- 4A.....17.5mm
- 5A.....20.0mm

オプション

オプションをご希望の際には型式末尾に下記記号を追加してご注文下さい

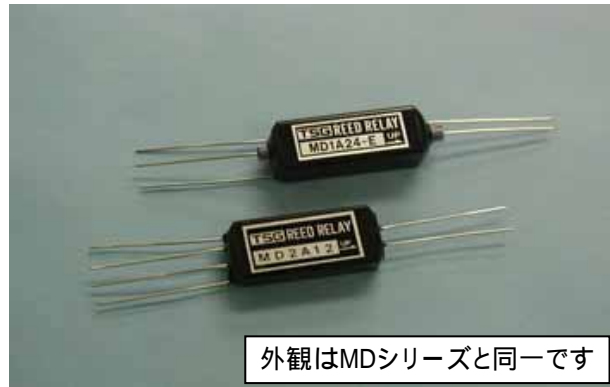
- ダイオード付き.....D
- 静電シールド付.....E
- ダイオード/静電シールド付き.....ED

## 新シリーズ ウェットチューブラ型 MRAシリーズ

MR1A\*\*      MR2A\*\*  
(1メーク)      (2メーク)

MR1A\*\*E  
(静電シールド付き1メーク)

MR2A\*\*E  
(静電シールド付き2メーク)



### 接点仕様

|            | 定格<br>[W]max | 切断電圧<br>[VDC]max | 切断電流<br>[A]max | 通電電流<br>[A]max | 初期接触抵抗<br>[mΩ]max | 耐電圧<br>[VDC] | 動作/復旧時間<br>[ms]max | 寿命<br>機械的[回]      |
|------------|--------------|------------------|----------------|----------------|-------------------|--------------|--------------------|-------------------|
| ウェット 1A&2A | 50           | 500              | 1              | 2              | 70                | 1500         | 2.5/2.0            | 1X10 <sup>9</sup> |

### 一般仕様

| リレータイプ        | 絶縁抵抗<br>[Ω]min     | 絶縁耐電圧<br>[VDC]min | 使用温度範囲<br>[℃] |
|---------------|--------------------|-------------------|---------------|
| MR1A & MR2A   | 1X10 <sup>10</sup> | 1500              | -20 ~ +60     |
| MR1AE & MR2AE | 1X10 <sup>12</sup> | 1500              | -20 ~ +60     |

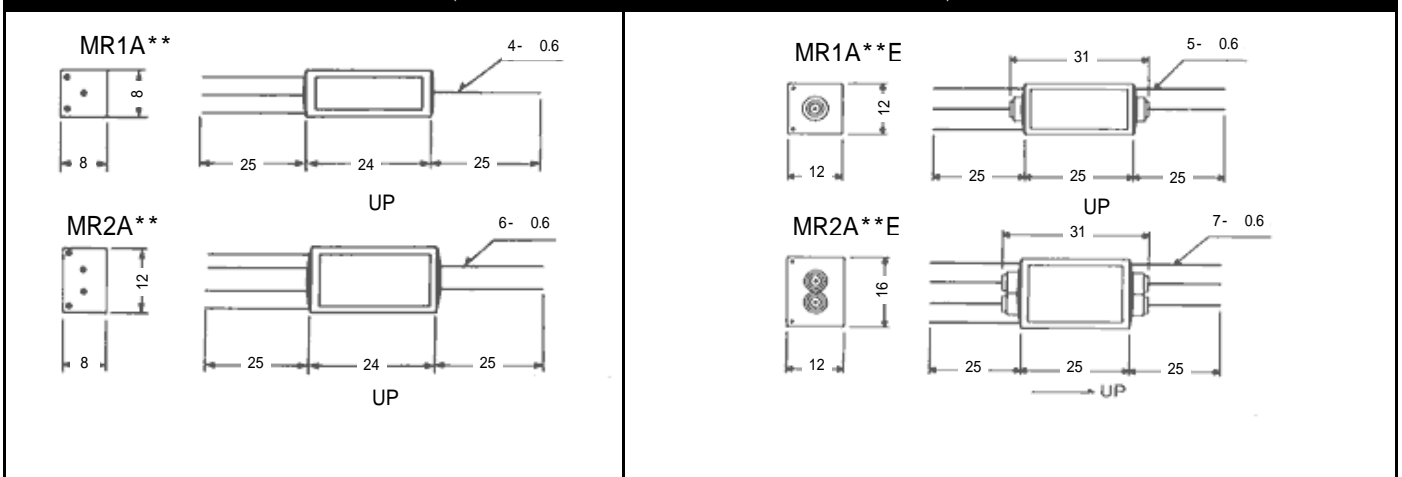
### コイル仕様

| 接点構成       | 型名      | 定格電圧<br>[VDC] | コイル抵抗<br>[Ω] | 定格電流<br>[mA] | 感動電圧 | 回路接続図 |
|------------|---------|---------------|--------------|--------------|------|-------|
| 1A         | MR1A05  | 5             | 100          | 50           | 3.8  |       |
|            | MR1A12  | 12            | 450          | 26.7         | 9    |       |
|            | MR1A24  | 24            | 1600         | 15           | 18   |       |
| 2A         | MR2A05  | 5             | 100          | 50           | 3.8  |       |
|            | MR2A12  | 12            | 350          | 34.3         | 9    |       |
|            | MR2A24  | 24            | 1300         | 18.5         | 18   |       |
| 1A<br>(E付) | MR1A05E | 5             | 100          | 50           | 3.5  |       |
|            | MR1A12E | 12            | 500          | 24           | 8.4  |       |
|            | MR1A24E | 24            | 1600         | 15           | 16.8 |       |
| 2A<br>(E付) | MR2A05E | 5             | 70           | 71.4         | 3.5  |       |
|            | MR2A12E | 12            | 30           | 40           | 8.4  |       |
|            | MR2A24E | 24            | 1000         | 24           | 16.8 |       |

\* 20 の値を示し、コイル抵抗値の許容偏差は10%とする。

### 外径寸法図


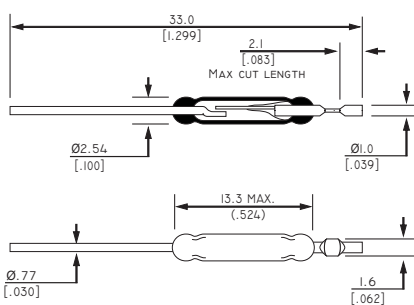
(取り付けは垂直に対し±30°以内の角度でお使い下さい)



# 水銀リードスイッチ

Mercury Reed Switch

**Part Number : MH4**  
**Mercury Wetted Reed Switch - Make Contact**  
**Product Data Sheet**

| PICTURE   | DIMENSIONS  | ORDERING INFORMATION   |
|---|---|--|
|  <p><b>Pb - FREE</b><br/>Plating and Glass are not containing any lead.</p> <p><b>NOTE:</b><br/>Vertical mounted required (±30° from vertical)</p> |  <p>Drawings not to scale. All dimensions in mm (inches) nominal.</p> | <p>PART NUMBER MH4 10 20 35</p> <ul style="list-style-type: none"> <li>● Switch Type ————— Operate AT - Range</li> <li>● Insulation Resistance ————— Max. Operate AT.</li> <li>● Min. Operate AT.</li> </ul> <p>10:10<sup>10</sup> Ohms Min.<br/>12:10<sup>12</sup> Ohms Min.</p> <p><b>Example:</b> MH4 10 20 35<br/>Insulation resistance 10<sup>10</sup> Ohms Min.<br/>Operate value is between 20 and 35 AT.</p> |

| SPECIFICATION                   |  |            |                           |
|---------------------------------|--|------------|---------------------------|
| Contact Form                    |  |            | A ( Make Contact )        |
| Contact Material                |  |            | Hg                        |
| Switching Voltage               | DC / Peak AC Resistive                     | Max.       | 500(*) Volts              |
| Switching Current               | DC / Peak AC Resistive                     | Max.       | 2.0 Amps                  |
| Carrying Current (24 h)         | DC / Peak AC Resistive                     | Max.       | 3.0 Amps                  |
| Contact Rating                  | DC / Peak AC Resistive                     | Max.       | 50 Watts                  |
| Operating Frequency             |  | Max.       | 200 Hz                    |
| Life Expectancy                 | 1.0V, 10mA                                 | Min.       | 1000 x10 <sup>6</sup> Ops |
|                                 | 50V, 1A                                    | Min.       | 2 x10 <sup>6</sup> Ops    |
|                                 | 500V, 100A                                 | Min.       | 50 x10 <sup>6</sup> Ops   |
| Operate AT Range                |  | Min - Max. | 20 - 35 AT                |
| Release AT Range                |  | Min.       | 8 AT                      |
| Insulation Resistance           | 500V, 25°C 40% RH                          | Min.       | 10 <sup>10</sup> Ohms     |
| Capacitance                     | Across Open Contacts                       |            | 0.3 pF                    |
| Dielectric Strength             | Between Contacts                           | Min.       | 1500 VAC                  |
| Operate Time                    | 1.5 Times Operate @ 20Hz<br>Sq.Wave 50% DC | Max.       | 2.0 msec                  |
| Release Time                    | Zener-Diode Suppresion                     | Max.       | 1.5 msec                  |
| Drain Time                      |  | Max.       | 5 sec                     |
| Static Contact Resistance       | 50mV, 10mA                                 | Max.       | 30 mOhms                  |
| Hg Content                      |  |            | 0.040 g                   |
| Storage Temperature             |  | Deg.       | -40°C + 125°C             |
| Operating Temperature           |  | Deg.       | -38°C + 125°C             |
| Soldering Temperature           | <10 sec st 260 °C                          | Deg.       | +260                      |
| Vibration Resistance (Survival) | 10Hz - 500Hz                               | Max.       | 10 g                      |
| Shock Resistance (Survival)     | 11±1ms, 1/2 Sine Wave                      | Max.       | 30 g                      |
| Weight                          |  |            | 0.24 grams                |

NOTE 1: Measured in testcoil NARM 1 or EN119000-03 / Gap position in coil: 2mm below center. The given Operate Value has a tolerance of ±2AT

NOTE 2: All parameters are at 25°C unless otherwise stated.

(\*) 1000 VDC (5W) - It might switch 1000V but limited to 5 watts.

| REV. NO. | REVISION NOTE      | DATE     | SIGNATURE |
|----------|--------------------|----------|-----------|
| A        | Datasheet Redesign | Nov 2007 | LG        |

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Reed Relays

  
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Rubber Keypads - Silicone Rubber



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