## Specification of JAXA Holter ECG

**(FM-180 and MMC)**

### 1. Specifications of FM-180

#### Overall
- **CPU**: 16 bit single chip
- **SRAM**: 512 K Bytes
- **LCD Resolution**: 112 dot × 72 dot (graphics)
- **Recording time**: Continuous 24 hours
- **Internal Clock**: RTC
- **Backup battery**: Lithium battery
  - Service life six (6) years or more
- **Patient EVENT recording**: EVENT switch
  - Records up to twelve (12) times / min
- **Recording media**: Multimedia card (MMC·64)
- **ECG signal recording unit**
  - **Number of recording channels**: bi-polar 2/3 channels, unipolar 2/3 channel
  - **Input impedance**: 10 MΩ or more
  - **CMRR**: 60 dB or more
  - **Gain ratio**: 300x (A/D input)
    - 300x (Monitor output)
  - **Frequency response**: 0.05/0.67~40Hz
  - **Monitor output**: 300 mV/1mV
  - **Quantifying bit number**: 10 bits
  - **Sampling frequency**: 125 Hz
  - **Dynamic range**: ±5.00 mV
  - **Minimum resolution**: ±9.76 μV
- **Pacemaker pulse detection**
  - **Detection channel**: given 1 channel
- **Acceleration sensor**
  - **3 axial directions (static position information detection)**
- **Switches**: 2 units (EVENT, ON ◎ ENTER)
- **Buzzer**: 1 unit (separate excitation)
- **Power supply**: one AAA battery
- **Dimensions (W×H×D mm)**: 65×62×18
- **Weight (g)**: 78g (incl. battery and multimedia card)
### 2. Specifications of MMC

**Multimedia Card (MMC-128)**
- Memory capacity : 128 M Byte
- Interface : MMC System Standard
- Dimensions (W×D×H mm) : 24×1.4×32
- Weight (g) : 1.5g
- Backup battery : Not required
- Card type : MMC System Standard
- Service life (Electrical) : Rewritable 100,000 times (Approx. 247 years / everyday use)
  - (Mechanical) : Endures Load/Eject 10,000 times (Approx. 7 years/ 4-Load/Eject a day)
- Error Rate : 52.8FIT
- Mean Time Between Failures (MTBF) : 18,914,171 hours
- Vibration-resistance (Operating) : 15 Gpp (MAX)
  - (Non-operating) : 15 Gpp (MAX)
- Shock resistance (Operating) : 500G (MAX)
  - (Non operating) : 500G (MAX)
- Acceptable card : Fukuda Denshi encoded. Commercially produced multi media cards are not usable.

### Environmental conditions

#### Operating environments

<table>
<thead>
<tr>
<th>Temperature</th>
<th>+10°C - +40°C (50°F to 140°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative humidity</td>
<td>30-85% (No condensation)</td>
</tr>
</tbody>
</table>

#### Storage environments

<table>
<thead>
<tr>
<th>Temperature</th>
<th>-10°C - +60°C (14°F to 140°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative humidity</td>
<td>10-95% (No condensation)</td>
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</tbody>
</table>