**SystempaK (Digital/File Type) Integrator Module**  
**Model J-SAZ 90**

**Introduction**
The Integrator Module (J-SAZ90) converts an input signal to a pulse and continuously counts it in conjunction with the counter. In addition to the proportional integration of inputs linearly, the Integrator Module, which provides the input linearization function as a standard function, can serve alone as a square root extractor.

The input range, linearization, output pulse width and other such setting changes are easily done with the dedicated Loader Software, which operates on a general-purpose PC.

**Specification**
- **Input signal:** 1 to 5V DC or 4 to 20 mA DC
- **Input impedance:** 1 MΩ (voltage input), 250 Ω (current)
- **Input linearization:** 101 linearization points
- **Square root extraction:** Input linearization is used (dropout function available).
  - Output circuit (Specifying of model): Triac (for driving the AC/DC electromagnetic counter) or open collector
- **Maximum allowable load:**
  - Triac; 24V DC 250 mA
  - Open collector; 30V DC 30 mA
- **ON voltage:**
  - Triac; 2V or less
  - Open collector; 0.4V or less
- **ON current:**
  - 250 mA or less (Triac)
  - 24V DC, 130V AC or less (Triac)
- **Maximum output frequency setting:**
  - Triac; 0.000278 HzF to 5 HzFS
  - Open collector; 0.000278 HzFS to 2 kHzFS
- **Pulse width type:**
  - Selectable from 50% duty, fixed on-pulse, or fixed off-pulse. (Open collector output only)
- **Pulse width time (ON time):**
  - Triac; Fixed at 100 msec
  - Open collector; 50 µsec to 1 sec (On the basis of 1 µ sec)
- **Input low-level cut:** Specifying of low cut value by %.
- **Output low-level cut:** Specifying of low cut frequency (7 digits).
- **Accuracy:** See the accuracy table:

<table>
<thead>
<tr>
<th>Maximum output frequency setting</th>
<th>Output span width</th>
<th>Output accuracy</th>
<th>% of output span</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000278 HzFS to 1 kHzFS</td>
<td>When 50% or more of frequency set maximum output.</td>
<td>±0.1% x (“Full-scale set output frequency”/2) / (“Full-scale set output frequency” - “0% set output frequency”).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>When 50% or less of ditto.</td>
<td>±0.2% x (“Full-scale set output frequency”/2) / (“Full-scale set output frequency” - “0% set output frequency”).</td>
<td></td>
</tr>
<tr>
<td>1 kHzFS to 2 kHzFS</td>
<td>---</td>
<td>±0.1% x (“Full-scale set output frequency”/2) / (“Full-scale set output frequency” - “0% set output frequency”).</td>
<td></td>
</tr>
</tbody>
</table>

- **Arithmetic period:** 5 msec
- **Input/output response:**
  - Minimum of 120 msec (0 to 90% response)
- **Insulation resistance:** 500V DC, 100 Ω min.
  - (Mutual between input - output - GND - power terminal)
- **Withstand voltage:** 1000V AC, 1 minute
  - (Mutual between input - output - GND - power terminal)
- **Power supply:** 24V DC ±10 %
- **Current consumption:** 200 mA or less (at 24V)
- **Ambient temperature:**
  - Normal operating condition; 5 to 45°C
  - Operation limit; 0 to 50°C
- **Ambient humidity:** 0 to 90%RH (No condensation allowed)
- **Mounting:** File
- **Color of front mask:** Black
- **Weight:** 250 g
- **Operating influence:**
  - Supply voltage effect; ±0.1%FS/24V DC ±10 %
  - Temperature effect; ±0.15%FS/10°C
- **Loader settings:**
  - Module ID; 16 one-byte characters, 8 two-byte kanji characters
  - Input scaling setting; Zero span setting within input range
  - Linearization setting; 101 points
  - Input filtering; Unavailable/available (Moving average)
  - Output low-level cut; Selectable from 50% duty, fixed on-pulse, or fixed off-pulse.
  - Pulse width type; Selectable from 50% duty, fixed on-pulse, or fixed off-pulse. (For open collector output)
  - Pulse width time; When set to fixed on-pulse or fixed off-pulse type. (For open collector output)
  - 50 µsec to 1 sec (1 µ sec resolution)
  - **Output zero span adjustment:** Setting of any value within output range (0.00278 Hz to 2 kHz F.S.). Minimum span: 10 C/H
**Figure 1. Functional block diagram of integrator module**

**Model Number Table**

<table>
<thead>
<tr>
<th>Basic model number</th>
<th>Selections</th>
<th>Additions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-SAZ90</td>
<td>I</td>
<td>I</td>
<td>Integrator Module</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>I</td>
<td>No varnish coated</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>I</td>
<td>Varnish coated</td>
</tr>
<tr>
<td></td>
<td>-1</td>
<td>I</td>
<td>Input: 1 to 5V DC</td>
</tr>
<tr>
<td></td>
<td>-2</td>
<td>I</td>
<td>Input: 4 to 20 mA DC</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>I</td>
<td>Output: Non-contact output</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>I</td>
<td>Output: Open collector</td>
</tr>
<tr>
<td></td>
<td>-0</td>
<td>I</td>
<td>Without test report</td>
</tr>
<tr>
<td></td>
<td>-1</td>
<td>I</td>
<td>With test report</td>
</tr>
</tbody>
</table>

Example: J-SAZ90X-12-0
Figure 2. Dimensions and wiring diagram

Note
1) 250Ω resistor is added for current input.
2) Operate the Module with a cover.
3) Terminal screws: M3.5
4) Use the pressured terminals with insulation sheath.
When ordering, please specify:

1) Tag number
2) Maximum output frequency* [Set to 0 to 1 Hz by default]

The following are also set by default:

a) Input linearization setting: Linear
b) Output low cut: Unavailable
c) Pulse width type: 50% duty

* Use the quick list below when specifying the range. Ranges other than those below are also accepted.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0 to 0.0278Hz (0 to 100°C/H)</td>
</tr>
<tr>
<td>02</td>
<td>0 to 0.2778Hz (0 to 1000°C/H)</td>
</tr>
<tr>
<td>03</td>
<td>0 to 1Hz</td>
</tr>
<tr>
<td>04</td>
<td>0 to 10Hz</td>
</tr>
<tr>
<td>05</td>
<td>0 to 100Hz</td>
</tr>
<tr>
<td>06</td>
<td>0 to 1kHz</td>
</tr>
<tr>
<td>07</td>
<td>0 to 5kHz</td>
</tr>
</tbody>
</table>

Please read the “Terms and Conditions” from the following URL before ordering or use:
http://www.azbil.com/products/bi/order.html

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