Introduction
The Monitor Switch Module provides the PV monitor function which issues two points of alarm outputs responding to a single input.
The J-SMS90 issues an alarm contact output when an input signal exceeds the internal pre-set value by comparing the input with the pre-set value.
The Monitor Switch Module provides the square root extraction function for the input processing of a differential pressure flowmeter as well as the linearization function that employs 101 linearization points for other linearization processing. To output more stable alarms, the alarm on-delay timer can be set. Setting of these functions is easily performed using 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)
- Output signal: Dry contact SPST
- Number of alarms: 2 points
- Output contact capacity:
  - 30V DC, 1 A (resistive load)
  - 100V AC, 0.3 A (resistive load)
- Minimum load applied to contact: 5V, 1 mA
- Electrical life of relay: 0.1 million times or more
- Mechanical life of relay: 20 million times or more
- Alarm output state:
  - Setting of energized or de-energized status during alarm-off (reversing by Loader Software)
- Relay contact:
  - Setting of a-contact (N.O) or b-contact (N.C) (by setting jumper)
- PV alarm action:
  - Hi/Lo limit, or Hi/Hi or Lo/Lo limit (Two-point alarm)
- First-order lag filtering: 0 to 20.0 sec (63% response)
- Alarm setting range: 0.0 to ±120.0% (0.1% resolution)
- Dead band (hysteresis width): 0.0 to 120%FS (0.1% resolution)
- Alarm setting accuracy: ±0.15%FS
- Insulation resistance: 500V DC, 100 MΩ min.
  - (Mutual between input - output - GND - power terminal)
- Withstand voltage: 1000V AC, 1 minute
  - (Mutual between input - output - GND - power terminal)
- Startup delay:
  - 0 to 10 sec (Setting of the delay time required before starting comparison since power on)
- Alarm on-delay:
  - 0 to 999 sec (Setting for when an alarm state needs to be maintained until the timing of relay action)
- Arithmetic period: 5 msec
- Response speed:
  - Approx. 120 msec (Time taken before an alarm is output at 0 to 100% input change and at the 50% alarm setting point, when set with no first-order lag filter, no alarm delay, and at 0% hysteresis)
Figure 1. Functional block diagram of monitor switch 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-SMS90</td>
<td>I</td>
<td>II</td>
<td>Monitor Switch Module (Digital type)</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td></td>
<td>No varnish coated</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td></td>
<td>Varnish coated</td>
</tr>
<tr>
<td></td>
<td>-1</td>
<td></td>
<td>Input: 1 to 5V DC</td>
</tr>
<tr>
<td></td>
<td>-2</td>
<td></td>
<td>Input: 4 to 20 mA DC</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>-0</td>
<td>W/o selection II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
<td>Without test report</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With test report</td>
</tr>
</tbody>
</table>

Example: J-SMS90X-2X-0
Note 1) 250 Ω 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.

Figure 2. Dimensions and wiring diagram
When ordering, please specify:

1) Tag number

2) Alarm setting value (0 to ±120%)
   - SP1 (Set to 80 by default)
   - SP2 (Set to 20 by default)

3) Hysteresis width (0 to ±120%)
   - HYS1 (Set to 0.2 by default)
   - HYS2 (Set to 0.2 by default)

4) Output contact specification type of SP1 and SP2
   - SP1 (Monitor #1): a-contact/b-contact [Set to a-contact by default]
   - SP2 (Monitor #2): a-contact/b-contact [Set to a-contact by default]

5) Alarm direction of SP1 and SP2
   - SP1 (Monitor #1): Hi/Lo [Set to Hi by default]
   - SP2 (Monitor #2): Hi/Lo [Set to Lo by default]

6) State of SP1 and SP2 during alarm (Reversal)
   - SP1: Not-reversed/reversed (Set to not-reversed by default)
   - SP2: Not-reversed/reversed (Set to not-reversed by default)

* When "not reversed," the relay is de-energized during alarm-off, and when "reversed," the relay is energized during alarm-off.

The following are also set by default:

a) Input filtering: Moving average available
b) First-order lag filtering: Available 0.1 sec
c) Startup delay time: 0 sec
d) Alarm on-delay time (Set individually on each of SP1 and SP2): 0 sec

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