The MS25-Ui is a digital-to-analogue converter that converts an input frequency into an analogue current or voltage relative to the adjusted measuring range. The device can accommodate NAMUR sensors, 3-wire pnp sensors or other voltage sources with pulse levels between 9 and 30 VDC.

To adjust the speed range an end value between 0.6...100 000 min⁻¹ or 0.01...1660 Hz is set using four multi-position switches. An output signal of 10 V or 20 mA accords to the end value.

If the speed rate is below 0.6 min⁻¹/0.01Hz an output signal of 0/4 mA or 0 V will be generated.

The voltage output supplies 0...10 V and the current output supplies 0/4...20 mA. The current output may be programmed for 4...20 mA operation by linking terminals 13 and 14.

If connected to NAMUR sensors, the input circuit is monitored for wire-break and short-circuit conditions. If a fault condition occurs, the dual colour LED turns from green to red and the output current drops to 0 mA (also in live-zero operation) or 0 V, respectively. The two conditions can be distinguished by the yellow LED; wire-break causes it to turn off.

When 3-wire pnp sensors are used, the power supply lines are monitored for wire-break only.
Rotational Speed
Monitors

Wire-break and short-circuit conditions on the output side of the sensor are not detected.

When external signal sources are connected, terminals 11 and 9 must be used. In order to suppress error indications, a 1...10 kΩ resistor must be connected between terminals 10 and 11.

To steady the input signal, an attenuation factor can be set between 1 and 10. When the factor is set to 1 (1 pulse sequence), there is no signal attenuation. The attenuation principle is based upon the floating average formed over the adjusted number of measurements.

Speed monitors used in connection with sensors from the hazardous area require a remote amplifier for operation.

Function
Measuring range 0.01...1660 Hz or 0.6...100 000 min⁻¹ (digitally adjustable)
Input frequency ≤ 150 000 min⁻¹
Pause duration ≥ 0.2 ms
Pulse duration ≥ 0.2 ms
Temperature drift ≤ 0.005 %/K v.E. (50 ppm)
Linearity error ≤ 0.1 % v.E.

Clearances and Creepage Distances
- Input and output circuit to power supply ≥ 4 mm
- Input circuit to power supply ≥ 4 mm (at 230 VAC)
  2 kV (at 24 VDC: 500 V)

Input Circuits
NAMUR input
- Operating characteristics
  Uᵢ = 8.2 V; Iᵢ = 8.2 mA
- Switching thresholds
  1.4 mA ≤ Iᵢ ≤ 1.8 mA
  0.15 mA ≤ Iᵢ ≤ 6 mA
- Wire-break trip point
- Short-circuit trip point
3-wire input
- Operating characteristics
  Uᵢ ≤ 15 V; Iᵢ ≤ 30 mA
- "ON" signal
  0...5 VDC
- "OFF" signal
  10...30 VDC

Output Circuits
Current output 0/4...20 mA (load ≤ 600 W)
Voltage output 0...10 V (Rₑ ≤ 2 kΩ), short-circuit protected
- Linearity error ≤ 0.1 % of final value
Pulse output (terminal 12) typ. ≤ 0.005 %/°C of final value
max. 0.01 %/°C of final value

LED Indications
- Power "ON" (2-colour LED) green – fault: red
- Input pulses yellow

Housing
50 mm wide, Polycarbonate/ABS
Mounting panel mounting or snap-on clamps for top-hat rail (DIN 50022)
Connection 2 x 8 self-lifting pressure plates
with wire sleeves
Degree of protection (IEC 60529/EN 60529) IP20
Operating temperature -25...+60 °C

multisafe® Rotational Speed Monitor MS25-Ui

<table>
<thead>
<tr>
<th>Type</th>
<th>Ident-No.</th>
<th>Operating voltage</th>
<th>Line frequency</th>
<th>Ripple Wpp</th>
<th>Current consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS25-U/230VAC</td>
<td>05 082 00</td>
<td>184...264 VAC</td>
<td>48...62 Hz</td>
<td>-</td>
<td>4.5 VA</td>
</tr>
<tr>
<td>MS25-U/24VDC</td>
<td>05 082 07</td>
<td>18...30 VDC</td>
<td>-</td>
<td>≤ 10 %</td>
<td>2.5 W</td>
</tr>
</tbody>
</table>