



MS22-RI/24VDC
MS22-RI/85-265VUC

The **MS22-RI** is a rotational underspeed/ overspeed monitor with setpoint output. It has an analog output (0/4-20 mA) in addition to a relay output. The MS22-RI accommodates 3-wire PNP sensors, NAMUR sensors, or other voltage sources with pulse levels between 10 and 30 VDC.

If NAMUR sensors are used, the input circuit is monitored for wire-break or short-circuit conditions. During a fault, the 2-color LED turns from green to red and the output relay de-energizes independently of the selected detection mode.

The yellow input pulse LED is used to differentiate between a wire-break and a short-circuit condition: a wire-break causes it to turn off. During a fault, the output current drops to 0. This method allows fault detection in controls or indicators connected to the output circuit.

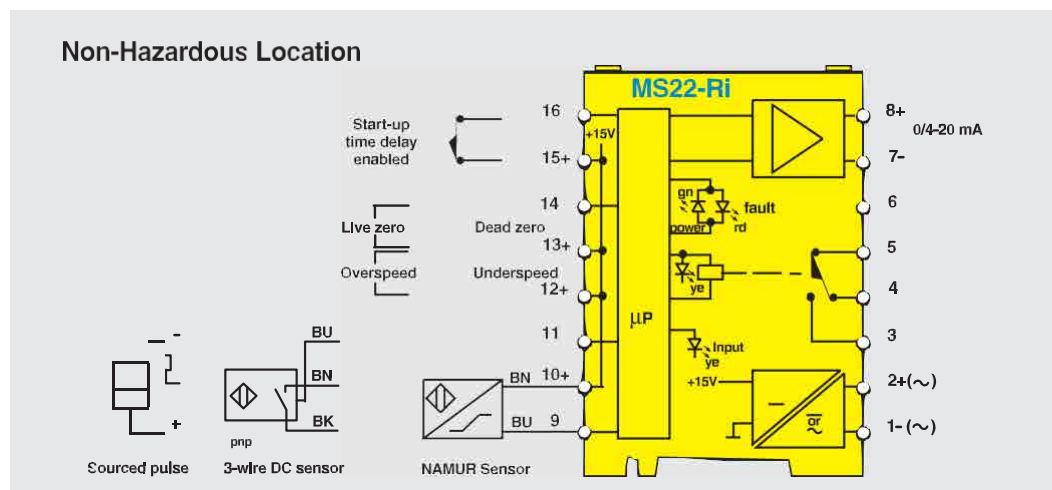
If 3-wire sensors are used, wire-break detection applies only to the supply lines. Wire-break and short-circuit conditions on the output of the sensor are not detected.

When external signal sources are used, they must be connected to terminals 9 and 11. In order to suppress fault indications, a 1-5k Ω resistor must be connected between terminals 10 and 11.

The device monitors for overspeed when terminals 12 and 13 are jumpered; it monitors for underspeed when terminals 12 and 13 are open. It operates on the digital pulse principle, which provides relatively short detection times in applications where input pulses occur infrequently. For control and indicator functions, the device features a standard analog signal corresponding to the rotational speed. The 0-20 mA output signal may be programmed to 4-20 mA with the jumper block setting (terminals 13 and 14) under the front cover.

Two front rotary switches are used to adjust the upper end of the speed range, with a corresponding 20 mA output. Below 0.6 pulses per minute the output current drops to 0/4 mA. Fine set-point adjustment between 10 and 100% of the upper limit is set within the selected range via an additional rotary switch on the front of the device. A yellow LED indicates the status of the output relay.

Connection Diagram



Overspeed/Underspeed Monitor with Analog Output MS22-RI/...(24VDC/85-265VUC)

| Type | MS22-RI/24VDC | MS22-RI/85-265VUC |
|-------------------------------------|--|--|
| ID Number | M050807 | M0508010 |
| Power Supply | | |
| Supply voltage | 18-30 VDC, \pm 10% ripple | 85-265 VAC/DC |
| Power consumption | 2.5 W | 4.5 VA |
| Function | | |
| Speed range | overspeed/underspeed 0.6-100,000 pulses/min | overspeed/underspeed 0.6-100,000 pulses/min |
| Switching point adjustment range | 10-100% | 10-100% |
| Input frequency | \geq 150,000 pulses/min | |
| Minimum pulse duration | \geq 0.2 ms | \geq 0.2 ms |
| Minimum pause duration | \geq 0.2 ms | \geq 0.2 ms |
| Hysteresis | approx. 10% | approx. 10% |
| Start-up time delay | 0.5-30 s (adjust., ten positions) | 0.5-30 s (adjust., ten positions) |
| Temperature drift - frequency | \pm 0.005%/K of full scale | \pm 0.005%/K of full scale |
| Temperature drift - analog output | \pm 0.005%/K of full scale | \pm 0.005%/K of full scale |
| Linearity error | \pm 0.1% of full scale | \pm 0.1% of full scale |
| Input Circuits | | |
| NAMUR input | NAMUR, 3-wire PNP per DIN 19 234 (term. 9/10) | NAMUR, 3-wire PNP per DIN 19 234 (term. 9/10) |
| - Nominal operating characteristics | V = 8.2 V, I = 8.2 mA | V = 8.2 V, I = 8.2 mA |
| - Switching threshold | 1.4 mA \pm I \pm 1.8 mA | 1.4 mA \pm I \pm 1.8 mA |
| - Wire-break threshold | \geq 0.15 mA | \geq 0.15 mA |
| - Short-circuit threshold | \geq 6 mA | \geq 6 mA |
| 3-wire input | PNP (term. 9/10/11) | PNP (term. 9/10/11) |
| - Nominal operating characteristics | V \geq 15 V, I \geq 30 mA | V \geq 15 V, I \geq 30 mA |
| - "OFF" signal | 0-5 VDC | 0-5 VDC |
| - "ON" signal | 10-30 VDC | 10-30 VDC |
| Output Circuits | | |
| | 1 SPDT relay, 1 analog output | 1 SPDT relay, 1 analog output |
| - Contact material | AgCdO + 3 μ Au | AgCdO + 3 μ Au |
| - Switching voltage | \geq 250 V | \geq 250 V |
| - Switching current | \geq 2 A | \geq 2 A |
| - Switching capacity | \geq 500 VA/60 W | \geq 500 VA/60 W |
| Analog output | | |
| - Current source | 0/4-20 mA (load impedance \geq 600 Ω) | 0/4-20 mA (load impedance \geq 600 Ω) |
| LED Indications | | |
| - Power "ON" and valid input | green | green |
| - Output energized | yellow | yellow |
| - Input pulse | yellow | yellow |
| - Fault indication | red | red |
| Housing Style | Diagram E (page A18) | Diagram E (page A18) |