The **MS21-12Ex0-R** is a single-channel rotational speed monitor with an intrinsically safe input circuit. It is designed to monitor pulse sequences from NAMUR sensors in hazardous locations. One DPDT setpoint relay output indicates overspeed or underspeed conditions to control equipment in non-hazardous locations.

The device monitors for overspeed when terminals 11 and 12 are jumpered; it monitors for underspeed when terminals 11 and 12 are open.

The device has six overlapping preset ranges. The speed preset is the product of the front panel switch and potentiometer settings. The unit operates on the digital pulse principle, which provides relatively short detection times in applications where input pulses occur infrequently. A yellow LED indicates the function of the output relay.

A start-up time delay (AU) is available for underspeed applications. The time delay inhibits speed monitoring and alarm indications during system start-up. The start-up time delay is adjustable from 0-60 seconds. It is enabled under two conditions:

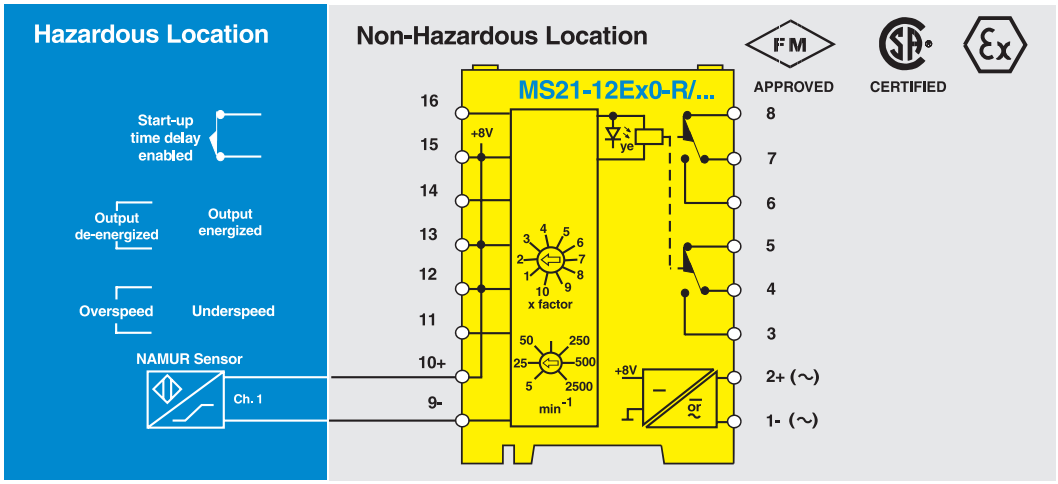
- if terminals 15 and 16 are open when power is applied to terminals 1 and 2.
- upon opening of a momentary contact between terminals 15 and 16.

During the start-up time delay, the output relays will be energized if terminals 13 and 14 are open and de-energized if they are linked.

The switching hysteresis and start-up time delay are adjusted by means of potentiometers inside the device that are accessed by removal of the front cover.

MS21-12Ex0-R/24VDC
MS21-12Ex0-R/115VAC
MS21-12Ex0-R/230VAC

Connection Diagram



Overspeed/Underspeed Monitor
Intrinsically Safe
MS21-12Ex0-R/...(24VDC/115VAC/230VAC)

Type	**MS21-12Ex0-R/24VDC**	**MS21-12Ex0-R/115VAC**	**MS21-12Ex0-R/230VAC**
ID Number	M5341700	M5341400	M5341100
Supply Voltage	20-28 VDC, ≤10% ripple	98-126 VAC, 48-62 Hz	184-250 VAC 48-62 Hz
Power / Current consumption	≤3.6 W	≤3.5 VA	≤3.5 VA
Galvanic isolation	between hazardous and non-hazardous circuits, test voltage 2.5 kVrms	between hazardous and non-hazardous circuits, test voltage 2.5 kVrms	between hazardous and non-hazardous circuits, test voltage 2.5 kVrms
Function	overspeed/underspeed	overspeed/underspeed	overspeed/underspeed
Speed range	5-25,000 pulses/min (6 subranges)	5-25,000 pulses/min (6 subranges)	5-25,000 pulses/min (6 subranges)
- Range 1	5-50 pulses/min	5-50 pulses/min	5-50 pulses/min
- Range 2	25-250 pulses/min	25-250 pulses/min	25-250 pulses/min
- Range 3	50-500 pulses/min	50-500 pulses/min	50-500 pulses/min
- Range 4	250-2,500 pulses/min	250-2,500 pulses/min	250-2,500 pulses/min
- Range 5	500-5,000 pulses/min	500-5,000 pulses/min	500-5,000 pulses/min
- Range 6	2,500-25,000 pulses/min	2,500-25,000 pulses/min	2,500-25,000 pulses/min
Minimum pulse duration	≥0.5 ms	≥0.5 ms	≥0.5 ms
Minimum pause duration	≥0.5 ms	≥0.5 ms	≥0.5 ms
Hysteresis	2-20% (adjustable, preset at 5%)	2-20% (adjustable, preset at 5%)	2-20% (adjustable, preset at 5%)
Start-up time delay	0-60 s (adjustable, preset at 15 s)	0-60 s (adjustable, preset at 15 s)	0-60 s (adjustable, preset at 15 s)
Repeatability	≤1% (constant temperature)	≤1% (constant temperature	≤1% (constant temperature
Input Circuit			
Nominal operating characteristics (per DIN 19 234)			
- Voltage	8.0 V	8.0 V	8.0 V
- Current	8 mA	8 mA	8 mA
Switching threshold	1.55 mA	1.55 mA	1.55 mA
Intrinsic Safety Parameters	See page K14	See page K14	See page K14
Output Circuit	one DPDT relay	one DPDT relay	one DPDT relay
Contact material	AgCdO	AgCdO	AgCdO
Switching voltage	≤250 VAC/60 VDC	≤250 VAC/60 VDC	≤250 VAC/60 VDC
Switching current	≤4 A	≤4 A	≤4 A
Switching capacity	≤1000 VA/30 W	≤1000 VA/30 W	≤1000 VA/30 W
LED Indications			
- Output energized	yellow	yellow	yellow
Housing Style	Diagram E (page A18)	Diagram E (page A18)	Diagram E (page A18)