



RM35S0MW

Presentation

Speed control relay RM35S0MW monitors:

Functions	RM35S0MW
Underspeed (with/without memory, with inhibition by external contact S2)	
Overspeed (with/without memory, with inhibition by external contact S2)	

- Function performed
- Function not performed

Speed control relay RM35S0MW measures via:

- A 3-wire PNP or NPN proximity sensor input
- A Namur proximity sensor input
- A 0-30 V voltage input
- A volt-free contact input

These control relays allow:

- Operation with either NO or NC sensors
- Adjustable time between impulses from 0.05 s... 10 min
- Adjustable power-on inhibition time from 0.6 to 60 s
- Inhibition controlled by an external contact
- Clip-on mounting on a 35 mm rail

They feature:

- A sealable cover to help protect the settings
- A control status indicator LED

Applications

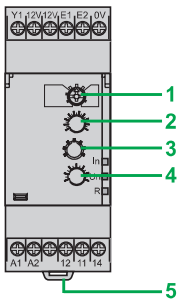
Monitoring the speed or rate of rotary or linear movements in the following applications:

- conveyors/conveyor belts
- packaging
- material handling

Description

RM35S00MW

- 1 Configuration: selection of operating mode: Underspeed or overspeed
Underspeed/Overspeed
with or without memory **Memory - No Memory**
- 2 Speed threshold setting potentiometer **Value**
- 3 Speed range selector switch
- 4 Starting inhibition time delay adjustment potentiometer **Ti**
- 5 Spring for clip-on mounting on 35 mm/1.38 in. rail



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In Yellow LED: indicates inhibition status (time delay or S2 input)

Un Green LED: indicates that supply to the product is on

R Yellow LED: indicates relay output status

Operating principle

Relay RM35S0MW monitors the speed (rate, frequency) of a process (conveyor, conveyor belt, etc.) using discrete sensors:

- 3-wire PNP or NPN proximity sensor, or 0-30 V voltage input, or NAMUR proximity sensor, or volt-free contact
- It can be used for monitoring underspeed or overspeed

Function Diagram

- Power supply off
- Power supply on
- Output 11-14, 21-24 open
- Output 11-14, 21-24 closed

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The control relay measures the speed as follows:

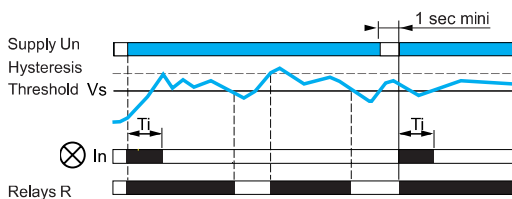
- The cycle of the process being monitored is a series of impulses characterized by a two-state signal: high and low.
- The speed is obtained by measuring the period of this signal, from the detection of first change of state (either rising or falling edge).
- Digital processing of the signal allows the disparity between the signals to be calculated.
- On energization or after appearance (or reappearance) of the sensor signal, detection (characterization) of the signal requires processing of one or two periods. During this time, control is inoperative.

The operating modes are selected by using the switch:

- Underspeed without memory
- Underspeed with memory
- Overspeed without memory
- Overspeed with memory

Underspeed control without memory

- Underspeed control, without memory



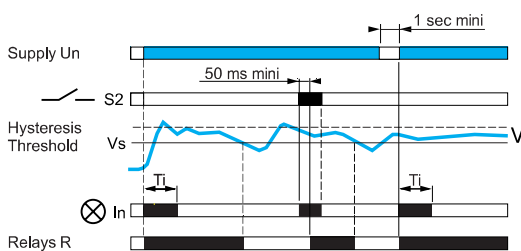
At the end of the starting inhibition time delay "Ti", as soon as the speed measured drops below the threshold setting, the output relay changes state from "closed" to "open".

It returns to its initial state when the speed is again higher than the threshold plus hysteresis (fixed at 5% of the threshold setting).

When power is restored, after a break having lasted at least 1 s, the relay is in the "closed" state during the time delay and stays in that state for as long as the speed remains higher than the threshold.

Underspeed control with memory

- Underspeed control, with memory



When relay RM35S has been configured in "memory" mode, if underspeed is detected, the output relay stays in the "open" state, irrespective of any further changes in the process speed.

It will not be able to return to the "closed" state until contact S2 closes (for at least 50 ms).

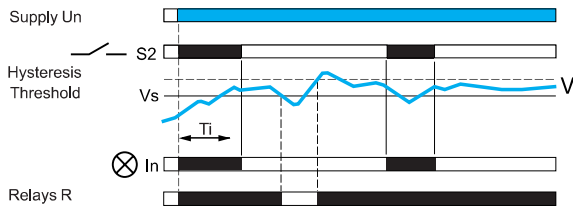
If, when S2 re-opens, the speed is not high enough, the relay returns to "open" state. Relay RM35S can also be reset by a power break (at least 1 s); the relay then returns to the "closed" state for at least the duration of the time delay, irrespective of the process speed.

Operating principle (continued)

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Underspeed control with inhibition by S2

- With inhibition by S2 **Inhib./S2**



On energization, to allow the process being monitored to reach its nominal operating speed, relay RM35S is inhibited for a time delay adjustable from 0.6...60 s. This time delay can be adjusted (shortened or lengthened) during inhibition.

Relay RM35S can also be inhibited by closing of contact S2: on starting, for example, if the process run-up to speed time is greater than 60 s, or at any time during operation.

Whether it results from a starting inhibition time delay or closing of S2, inhibition keeps the output relay in the “closed” position and is signaled by illumination of the inhibition LED.

If, after lifting of inhibition (end of starting inhibition time delay or opening of contact S2), the signal detection phase has not been completed, the relay drops out after the set wait time between two impulses (measured from the end of inhibition).

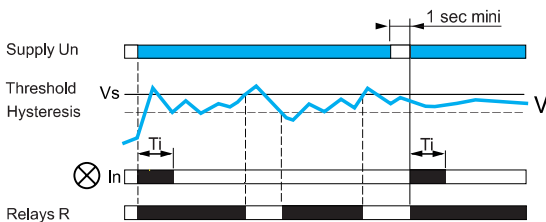
Inhibition should last as long as is necessary for the product to detect at least 2 periods.

When the signal has not been ‘characterized’ by the end of the inhibition period, the “inhibition” LED flashes for as long as speed measurement is impossible.

It is also possible to inhibit relay RM35S at any time, during operation, by closing S2.

Overspeed control without memory

- Overspeed control, without memory



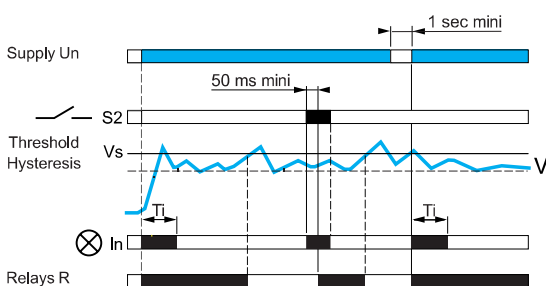
At the end of the starting inhibition time delay, “Ti”, as soon as the speed measured is higher than the threshold setting, the output relay changes state from “closed” to “open”.

It returns to its initial state when the speed is again lower than the threshold minus hysteresis (fixed at 5% of the threshold setting).

When power is restored to relay RM35S, after a break having lasted at least 1 s, the relay is in the “closed” state during the time delay and stays in that state for as long as the speed remains lower than the threshold.

Overspeed control with memory

- Overspeed control, with memory



When relay RM35S has been configured in “memory” mode, if overspeed is detected, the output relay stays in the “open” state, irrespective of any further changes in the process speed.

It will not be able to return to the “closed” state until contact S2 closes (for at least 50 ms).

If, when S2 re-opens, the speed is too high, the relay returns to the “open” state.

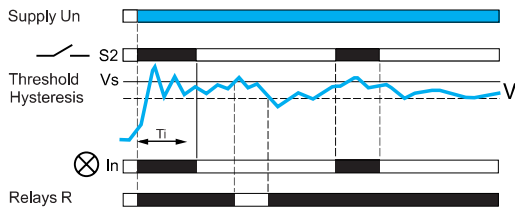
Relay RM35S can also be reset by a power break (at least 1 s); the relay then returns to the “closed” state for at least the duration of the time delay, irrespective of the process speed.

Operating principle (continued)

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Overspeed control with inhibition by S2

□ With inhibition by S2. **Inhib./S2**



On energization, in order to allow the process being monitored to reach its nominal operating speed, relay RM35S is inhibited for a time delay adjustable from 0.6...60 s. This time delay can be modified (shortened or lengthened) during inhibition.

Relay RM35S can also be inhibited by closing of contact S2: on starting, for example, if the process run-up to speed time is greater than 60 s, or at any time during operation.

Whether it results from a starting inhibition time delay or closing of S2, inhibition keeps the output relay in the “closed” position and is signaled by illumination of the inhibition LED.

If, after lifting of inhibition (end of starting inhibition time delay or opening of contact S2), the signal detection phase has not been completed, the relay drops out after the set wait time between two impulses (measured from the end of inhibition).

Inhibition should last as long as is necessary for the product to detect at least 2 periods. When the signal has not been ‘characterized’ by the end of the inhibition period, the “inhibition” LED flashes for as long as speed measurement is impossible.

It is also possible to inhibit relay RM35S at any time, during operation, by closing S2.

Reference



RM35S0MW

Function	Supply V	Measurement Input	Output	Reference	Weight kg/lb
■ Underspeed	24...240 ~	■ 3-wire PNP or NPN proximity sensor	1 CO 5 A	RM35S0MW	0.130/ 0.287
■ Overspeed					
		■ Namur proximity sensor			
		■ 0-30 V voltage			
		■ Volt-free contact			