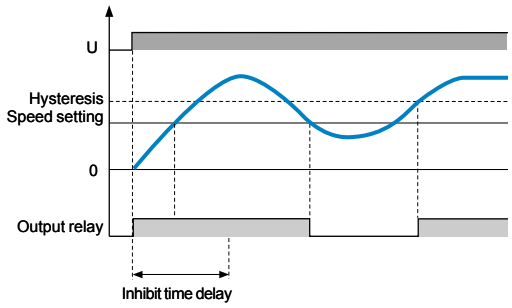
Zelio Control - measurement and control relays

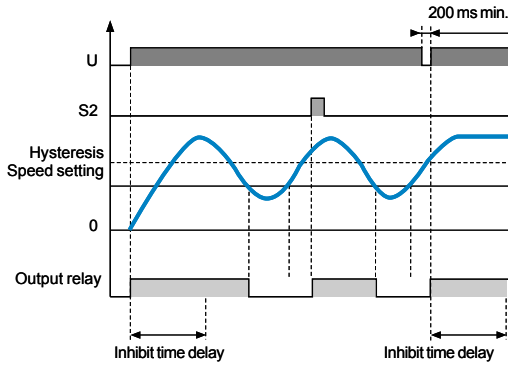
Underspeed control relays, model RM 84 874

- *Detection of motor underspeed, stoppage, running speed or stalling.*
- *Information detected by 3-wire or NAMUR sensor, or by contact or voltage.*
- *Adjustable time from 100 ms to 10 min in 4 sub-ranges.*
- *Power-on inhibit time adjustable from 0.3 to 30 seconds.*
- *Default time delay adjustable from 0.3 to 3 seconds.*
- *Power on and output relay state indication LEDs.*

Without latching



With latching



Operating principle

This control relay is used to resolve problems of underspeed on: conveyor belts, conveyors, etc., where crossing of a low speed threshold must trigger an alarm.

Speed information is detected by means of a sensor such as a 3-wire or NAMUR proximity sensor, or a volt-free contact, or the voltage.

On energisation, in order to allow the process being monitored to reach its operating speed, monitoring is inhibited for a time between 0.3 and 30 seconds, which can be adjusted on the front panel of the control relay.

If starting requires an inhibition time greater than 30 seconds, external contact S2 must be closed during starting to inhibit the relay (during this time, the yellow LED flashes), then opened once nominal speed has been reached.

On each cycle of the process being monitored, the sensor sends an impulse to the relay.

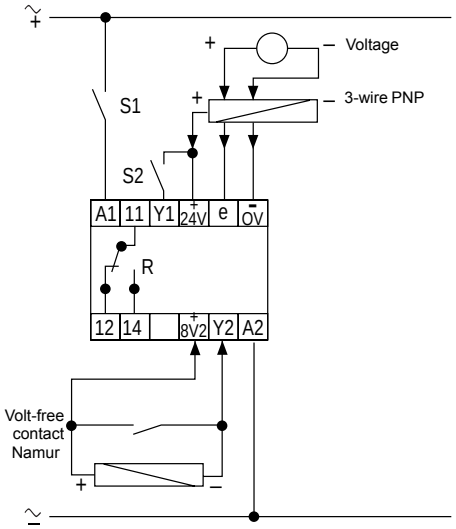
Each of these impulses resets the relay's internal time delay.
If the time between two impulses is less than the setting value on the relay, the time delay is reset at each impulse, and the output relay stays closed.

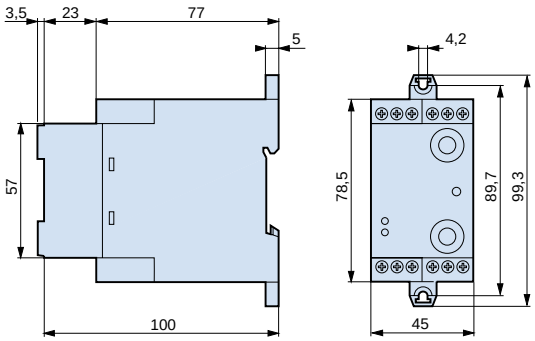
If the speed of the process being monitored drops, the time between two impulses increases.
When the time between two impulses is greater than the setting value on the relay the process being monitored is running at underspeed and the output relay changes state (opens).
The output relay closes again when the speed of the process being monitored exceeds the setting value, plus the hysteresis (5% of the setting value).

If "memory" mode is selected, the relay stays open when an underspeed fault is detected. In this case, the output relay can only close again after a manual reset has been performed by closing external contact S2.

A yellow LED indicates the state of the relay.
A green LED indicates that the power supply is ON.

Connection scheme and dimensions





Terminal identification

AI - A2	: Supply voltage
11 - 12 - 14	: Output relay (R)
+ 24 V - E - 0 V	: 3-wire PNP sensor
E - 0 V	: Voltage input
+ 8 V 2 - Y2	: Contact/NAMUR sensor input

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References

RM 84 874 304

Underspeed control

Voltage	Reference	Weight kg
⎓ 24 V	**RM 84 874 300**	0.255
∿ 24 V	**RM 84 874 301**	0.255
∿ 110 V	**RM 84 874 303**	0.255
∿ 230 V	**RM 84 874 304**	0.255

Supply characteristics

Relay type			RM 84 874 300	RM 84 874 301/RM 84 874 303/ RM 84 874 304
Supply voltage Un		**V**	⎓ 24	∿ 24, ∿ 110, ∿ 230
Operating range			0.85…1.15 Un	0.85…1.15 Un
Maximum power consumption			1 W max at Un and 1.5 W at Un + 15 %	3.5 VA max at Un and 5 VA at Un + 15 %
Immunity to microbreaks		**ms**	10	10
Creepage distance and clearance	Conforming to IEC 60664-1	**kV**	4 kV/3	4 kV/3

Input/control circuit characteristics

Input circuit	3-wire sensor		24 V PNP (50 mA max)
	NAMUR sensor		8.2 V on 1 kΩ
	Contact		Volt-free
	Voltage input	**V**	30 max
Input resistance		**kΩ**	16 kΩ except for NAMUR 1
State	High	**V**	Min 4.5; max 30
	Low	**V**	Min 0; max 1
Cut-off frequency		**Hz**	200
Minimum impulse time		**ms**	5
Minimum time between impulses		**ms**	5
Selection of time delay and memory function			8-position switch on front panel
	Without memory		0.1…1 s, 1…10 s, 0.1…1 min, 1…10 min
	With memory		0.1…1 s, 1…10 s, 0.1…1 min, 1…10 min
Hysteresis			5 % of the threshold setting
Setting accuracy			10 % of the full scale value (at 25 °C)
Repeat accuracy			± 0.5 % with constant parameters
Temperature drift			± 0.05 % / °C
Voltage drift			± 1 % / V
Reset time		**ms**	200 minimum
Reset time for S2		**ms**	100 minimum
Inhibit time delay		**s**	0.3…30 ± 10 %

Output circuit characteristics

Output			1 C/O contact, AgCdO
Breaking capacity			2000 VA, 80 W
Maximum breaking current		**A**	∿ 8, ⎓ 8
Minimum breaking current		**mA**	∿ 100, ⎓ 100
Maximum switching voltage		**V**	∿ 100, ⎓ 100
Mechanical life			5 x 10^6 operating cycles
Electrical life	AC-12		2000 VA - 10^5 operating cycles
	AC-15		Cos φ = 0.3 - 6000 operating cycles
	DC-13		L/R = 300 ms - 6000 operating cycles

Other characteristics

Enclosure material			Self-extinguishing Pc
Terminal capacity	With cable end	**mm^2**	2 x 1.5
	Without cable end	**mm^2**	2 x 2.5
Temperature limits	Operation	**°C**	- 20…+ 60 (conforming to IEC 68-1-14)
	Storage	**°C**	- 30…+ 70 (conforming to IEC 68-1-1/2)
Relative humidity			93 % without condensation
Product certifications			c UL us, CSA

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