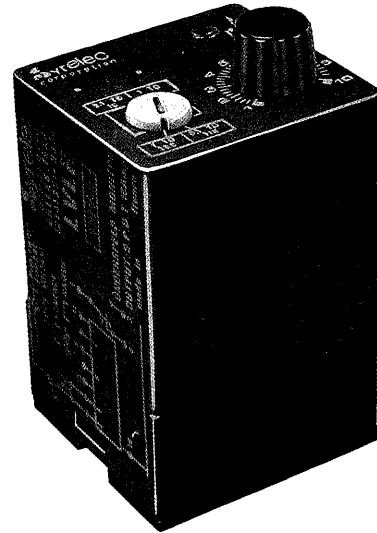# VLR SERIES
Underspeed Monitor

* **Start-Up Inhibit Time**
* **Adjustable Time Ranges**
* **Multiple Inputs**
* **Speed to 300 Hz**

This straight forward underspeed detector can monitor all underspeed requirements (conveyors, worm reductions, pack-aging machines . . . etc.) where it is essential that loss of speed or stopping gives an alarm. The input information sensor for the speed can be a proximity switch, voltage level or contact closure.

When metal is present on a proximity sensor (or a contact open) the timer is reset and commences a new time cycle. At normal speeds, the time between two impulses is less than the time set on the timer. The timer constantly resets and the output relay remains energized. If the speed should decrease, the timer times out and the relay de-energizes. The relay contacts can then operate an alarm or stop the machine. The input power should be removed from the underspeed monitor for 150ms or the contact of command S2 should be closed to reset the control.

When the input power is restored, the relay either re-energizes for a fixed time (up to 20 Sec demand) in order to allow the machine to run up to speed or by closing S2 in the case of start run up time longer than 20 sec.

The relay will de-energize in the event of power failure, failure of the sensor or breakage of the cable between the sensor and the unit, thus stopping the machine.

SPECIFICATIONS:

Input Power	24 VAC, 24 VDC, 48 VAC/DC, 110, 220 VAC, $\pm$ 15%, (50/60 Hz)
Maximum Power Consumption	24 VAC: 1.5 VA 24 VDC: .5W
	48 VAC: 2 VA 48 VDC: 1.8W
	110 VAC: 6 VA
	220 VAC: 11 VA
Output	SPDT relay
Contact Material	AgCdo
Maximum Loading	10A AC 1A DC
Relay Maximum Power Rating	2200VA 30W DC
Maximum Permissible Peak Current	15A
Mechanical Life of Relay	30×10^6 operations
Electrical Life of Relay	2×10^5 operations at 10A 220 VAC resistive load
Maximum Operate Rate	600/hr at 10A, 220 VAC
Repetition Accuracy at Constant Ambient	0.5%
Reset Time	150ms
Timing Ranges	Selectable in Four Ranges: 0.06 to 0.6 sec., 0.25 to 2.5 sec., 2 to 60 sec., 16 to 160 sec.
Input Circuit	2 wire Proximity 8.2V, 1K Ω
	3 wire Proximity 24V, 2.2K Ω
	Contact closure, 8.2V @ 8ma
	Voltage Pulse 30V max
Input Resistance	2K Ω except for NAMUR 1K Ω
High Level Mini	3V
Low Level Max	1V
Maximum Operate Speed	300Hz
Minimum Impulse	1ms
Minimum Time Between Impulses	1ms
Inhibit Time	0.1 to 20 sec Adjusted in Factory on request
Operating temperature	+ 14°F to + 140°F – 10°C to + 60°C
Weight	2.8 oz. (100 grams)

WIRING DIAGRAM
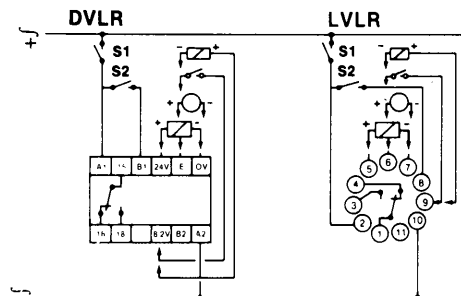
The external contact S2 for reset and inhibit should be isolated from all other circuit (12V, 3 mA)
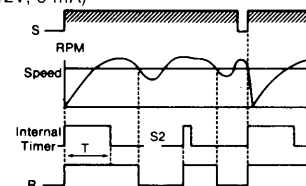
The time base setting is determined by calculating the time between two input pulses at minimum acceptable speed. The time base formula is:

$$T = \frac{60}{n(V)}$$

n = inputs per cycle or revolution
V = speed in RPM

One input pulse per revolution would suffice for high speeds. It may be necessary to have more than one input per revolution for slower speeds to establish a reasonable operating update time.

ORDERING INFORMATION:

D	VLR	10S	24
MOUNTING	SERIES	TIME RANGE	INPUT POWER

MOUNTING
D = DIN-rail or panel mounting
L = 11 pin plug-in

SERIES
VLR

TIME RANGE
Inhibit Time (0.1 to 20s)
Ex: 10S = 10 Seconds

INPUT POWER
24A = 24 VAC
24D = 24 VDC
48 = 48 VAC/DC
110 = 110 VAC
220 = 220 VAC