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Failsafe? Failsecure? Which Do I Want?

Are you confused about the meaning of *failsafe* and *failsecure* configuration for the inductive loop vehicle detector? Maybe this will help.

The detector output consists of a single pole, double throw relay, providing both a normally open (N.O.) and a normally closed (N.C.) output. The relay contacts are “dry”; they provide no output voltage. They only switch an externally applied voltage, much like a light switch or a doorbell button. Where a detector has two outputs, this discussion applies only to the primary output, generally called Output A. To simplify things, we will discuss the operation of the N.O. contacts, the most common usage. Imagine the output to be like the doorbell button - as long as the button is not pressed, the circuit is open and nothing gets through to ring the doorbell. If the button is pressed, the circuit is closed and current gets through to ring the doorbell. The same logic, only inverted, applies to N.C. contacts. In the failsafe configuration, N.O. and N.C. output conditions exist only with detector input power applied, loop(s) connected, and no vehicle on the loop(s).

Failsafe Configuration

If the closure of the N.O. contacts is considered to be a detect output, a **failsafe** detector will produce this output:

- when a vehicle is detected on the loop(s),
- when there is a loop failure, or
- when input power to the detector is lost.

This will explain why a loop failure or loss of input power will cause the free exit detector to open a gate or door, or the safety detector to hold the gate or door open, once opened and the vehicle has left the loop(s). The advantage of this mode is that the user is immediately aware of a problem and will report it. Also, vehicles are not trapped within the perimeter of the gated area in the event of a loop failure or loss of input power. The disadvantage is that security may be compromised.

Failsecure Configuration

A failsecure detector, on the other hand, will produce a detect output only when a vehicle is on the loop(s). This is great for high security applications when used as a free exit detector. In the event of a loop failure or loss of power to the detector, the gate or door will not open and you are sure to hear about it - probably not in a nice tone of voice. Don't use a failsecure detector for a safety

application. If the loop fails or input power is lost, there is no obvious indication of a problem and NO PROTECTION. This problem can be partially compensated in our newer detectors featuring a second output, generally called Output B, with a switch-selectable Loop Fail mode. This output may be used to control a local warning strobe or to turn on a remote visual or audible warning indication. Or the Loop Fail output can be paralalled with Output A. This setup will produce an output:

- when a vehicle is detected or
- when a loop fault occurs.

IT WILL NOT PRODUCE AN OUTPUT IF INPUT POWER TO THE DETECTOR IS LOST.

Unless a fuse in the detector fails (a very remote possibility) or someone inadvertantly turns off the circuit breaker for the detector somewhere back up the line, the possibility of losing power to the detector alone is pretty slim. In the event of complete loss of commercial power, there would be no adverse effects using either configuration. No power - no gate or door operation, unless of course, the operator contains a backup source of power.

Output B, where provided, is always in the failsecure configuration.

Below is a typical output relay logic table (taken from the 326 detector series). Output B N.C. relay contacts are not available on detectors using a 10-pin MS or Molex connector. The table illustrates many of the concepts presented in the preceding explanation.

OUTPUT RELAY CONDITIONS												
		FAILSAFE					FAILSECURE					
		POWER OK				POWER OUT	POWER OK				POWER OUT	
		Loop Normal		Loop Failed			Loop Normal		Loop Failed			
		Car	Vacant	Car	Vacant		Car	Vacant	Car	Vacant		
A (Presence)	N.O.	Closed	Open	Closed	Closed	Closed	Closed	Open	Open	Open	Open	Open
	N.C.	Open	Closed	Open	Open	Open	Open	Closed	Closed	Closed	Closed	Closed
B (Pulse)	N.O.	Mom. Closed	Open	Open	Open	Open	Mom. Closed	Open	Open	Open	Open	Open
	N.C.	Mom. Open	Closed	Closed	Closed	Closed	Mom. Open	Closed	Closed	Closed	Closed	Closed
B (Presence)	N.O.	Closed	Open	Open	Open	Open	Closed	Open	Open	Open	Open	Open
	N.C.	Open	Closed	Closed	Closed	Closed	Open	Closed	Closed	Closed	Closed	Closed
B (Fail)	N.O.	Open	Open	Closed	Closed	Open	Open	Open	Closed	Closed	Closed	Open
	N.C.	Closed	Closed	Open	Open	Closed	Closed	Closed	Open	Open	Open	Closed

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