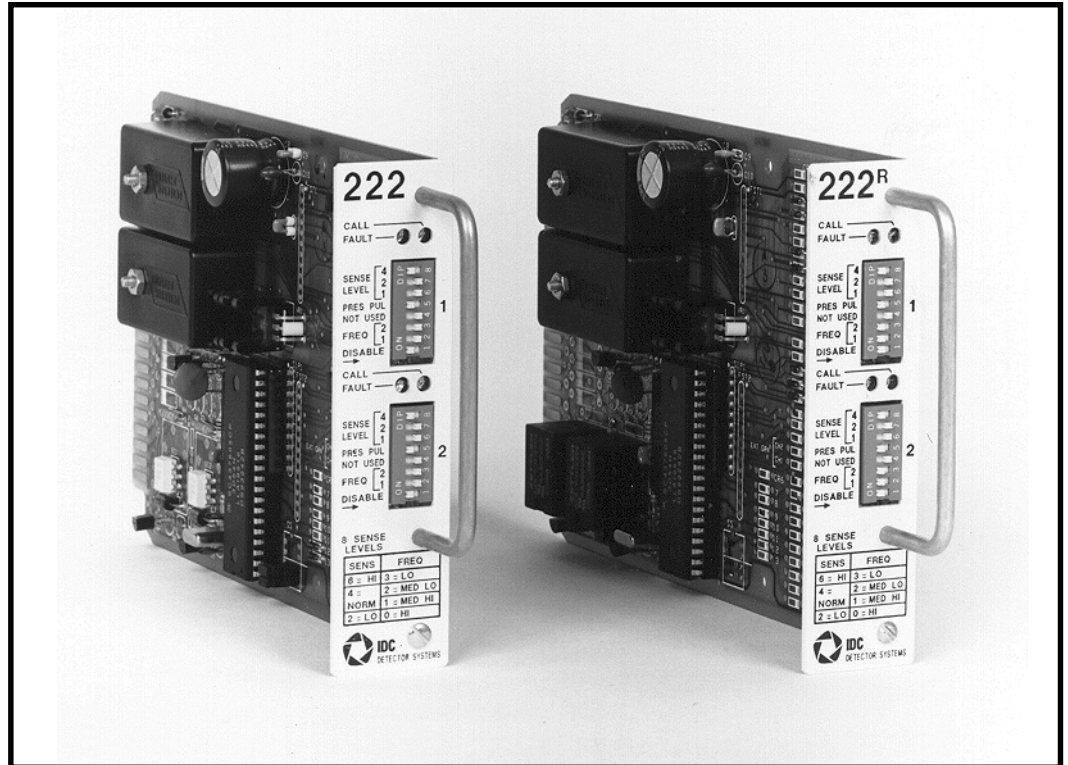


U.S. Traffic Corporation

Manufacturers & System Engineers

Models 222/222R

Two Channel
Digital Loop
Vehicle Detector



Features & Benefits

- Loops are sequentially scanned, which helps eliminate crosstalk.
- If intermittent or failed loops self-heal, the detector will resume normal operation without requiring a manual reset.
- Self-tuning and complete environmental tracking
- Two selectable modes per channel:
 - √ Pulse
 - √ Presence
- Failsecure or failsafe available
- Four loop frequencies per channel
- Eight levels of sensitivity per channel, over an extended range, cover every situation.
- Switching sensitivity level, loop frequency, and operating modes is accomplished by DIP switches.
- All adjustments and controls are separate and independent for each channel, with the exception of the reset input.
- An on-board jumper for each channel is provided to assure a minimum presence output of 100 milliseconds.
- Two independent LED indicators:
 - √ CALL
 - √ FAULT
- The Winky-Blink™ loop monitor remembers and indicates intermittent and failed loops.
- Transformer isolation for loops
- High intensity LED DETECT indicators
- Front panel width is 1.12" (28 mm)



▼ Model 222 Specifications

Self-Tuning: The detector automatically tunes itself and is fully operational within one second after application of power or after being reset, except 30 seconds is required before full presence time is possible.

Environmental & Drift Tracking: The detector is fully self-compensating for environmental changes and component drift over the full temperature range and the entire loop inductance range.

Loop Inductance Range: 50 to 2000 microhenries with Q factor of 5 or greater.

Loop Feeder Length: Up to 5000' (1500 m) maximum with proper feeder cable and appropriate loops.

Loop Frequency: Four frequencies (normally in the range of 15 to 84 kilohertz) are switch selectable for each channel. The detector should be manually reset following a manual change in loop frequency.

Loop Input: Transformer isolated.

External Reset: Switch closure between D.C. Common (pin A) and the reset line (pin C) for 15 microseconds or longer will reset both detector channels.

Manual Reset: Both channels of the detector may be manually reset by removing power momentarily. An individual channel may be manually reset by momentarily changing the sensitivity setting, by momentarily changing the PRES/PULSE switch, or by momentarily moving the DISABLE switch to OFF and back to ON.

Grounded Loop Operation: The loop isolation transformer allows operation with poor quality loops (which may include one short to ground at a single point).

Lightning Protection: The detector can tolerate, without damage, a 10 microfarad capacitor charged to 2000 volts being discharged directly into the loop input terminals, or a 10 microfarad capacitor charged to 2000 volts being discharged between either loop terminal and earth ground.

Intermittent Loop Monitor: If the total inductance of the detector input network exceeds the specified inductance range or takes a step change of more than 25% from the operating inductance, the detector will generate a no call in the failsecure mode and a continuous call in the failsafe mode, and the front panel FAULT LED will illuminate. As long as the fault remains, the detector will indicate steady on in failsafe mode or steady off in failsecure mode until the faulty loop condition is corrected. If the faulty loop self-heals, the detector output will resume normal operation. However, the FAULT indicator will begin repeating bursts of three blinks, the Winky-Blink™ mode, until the detector is manually reset or a power interruption occurs. This feature helps identify intermittent loop problems not present during troubleshooting.

Sequential Scanning: The two loops are activated alternately to minimize crosstalk.

Sensitivity: Vehicle detection results from a sufficient negative change in loop inductance ($-\Delta L/L$). Eight detection sensitivity levels, plus OFF, are switch selectable per channel.

SENSITIVITY	$-\Delta L/L$	SENSITIVITY	$-\Delta L/L$
Level 7	0.01%	Level 3	0.16%
Level 6	0.02%	Level 2	0.32%
Level 5	0.04%	Level 1	0.64%
Level 4	0.08%	Level 0	1.28%

Channel Off State: When the front panel DISABLE DIP switch is set to OFF, the output is off and the channel is disabled and reset.

CALL Indicator Operation: High intensity red light emitting diode (LED) indicates output status of each detector channel.

√ CALL OUTPUT: Steady on while vehicle is being detected.

√ FAIL MODE:

- Failsafe - Steady on as long as FAULT exists.
- Failsecure - Steady off as long as FAULT exists.

Failed or Out-Of-Range Loop Condition: FAULT indicator steady on. If the loop self-heals, the fault indicator will emit the Winky-Blink™ signal of three 50 ms blinks, 50 ms apart, which repeat once per second. (NOTE: If loop frequency is manually changed, the fault indication may appear, if the detector is not reset.)

Response Time:

TYPICAL RESPONSE TIMES FOR SOLID STATE OUTPUT. CONSULT FACTORY FOR RESPONSE TIME FOR RELAY OUT.					
SENS	RESPONSE TIME		SENS	RESPONSE TIME	
	Min	Max		Min	Max
Level 0	1.4 ms	3.4 ms	Level 4	1 ms	5 ms
Level 1	1.4 ms	3.4 ms	Level 5	2 ms	8 ms
Level 2	1.4 ms	3.4 ms	Level 6	5 ms	14 ms
Level 3	1.4 ms	3.5 ms	Level 7	9 ms	26 ms

Output Conditions:

SOLID STATE OUTPUT TRANSISTOR CONDITIONS					
MODEL 222 FAILSAFE	POWER OK				POWER OUT
	Normal		Loop Failed		
Output	Car	No Car	Car	No Car	
PRES (Presence)	On	Off	On	On	Off
PUL (Pulse)	Mom. On	Off	On	On	Off

SOLID STATE OUTPUT TRANSISTOR CONDITIONS					
MODEL 222 FAILSECURE	POWER OK				POWER OUT
	Normal		Loop Failed		
	Car	No Car	Car	No Car	
PRES (Presence)	On	Off	Off	Off	Off
PUL (Pulse)	Mom. On	Off	Off	Off	Off

Output Conditions:

RELAY OUTPUT CONTACTS CONDITIONS						
MODEL 222R FAILSAFE		POWER OK				POWER OUT
		Normal		Loop Failed		
Output		Car	No Car	Car	No Car	Closed
PRES (Presence)	N.O.	Closed	Open	Closed	Closed	
PUL (Pulse)	N.O.	Mom. Closed	Open	Closed	Closed	

RELAY OUTPUT CONTACTS CONDITIONS						
MODEL 222R FAILSECURE		POWER OK				POWER OUT
		Normal		Loop Failed		
Output		Car	No Car	Car	No Car	Open
PRES (Presence)	N.O.	Closed	Open	Open	Open	
PUL (Pulse)	N.O.	Mom. Closed	Open	Open	Open	

Modes:

- **PRES (Long):** Presence mode with a hold time of 4 minutes minimum (regardless of vehicle size) and typically 60 to 90 minutes for a car. (Other times are possible by special order from the factory.)
- **PULSE:** In the pulse mode, each vehicle generates a pulse output of 125±25 milliseconds. Should a vehicle remain over the loop for 2 seconds or longer, the detector will tune out the vehicle such that the remainder of the loop zone detects subsequent vehicles after 2 seconds. When the vehicle leaves the loop, the detector resumes full sensitivity within 0.75 seconds.

Relay Output Ratings (222R): The relay contacts are rated for: 3 A max., 150 VDC max., 300 VAC max., and 100 watts max. switched power.

Solid State Output Ratings (222): Optically coupled transistors; 40 VDC maximum collector to emitter; 50 mA maximum collector current. The transistor saturation level is 1.2 VDC maximum. The output transistor is protected with a 47 volt zener diode connected between the emitter and collector.

Power: 16 VDC to 30 VDC, 80 mA maximum

Operating Temperature: -40°F to +180°F (-40°C to +82°C)

Size: 4.5" H x 6.875" L x 1.12" W
(114 z 175 x 28 mm)
Edge card connector is centered on the 4.5" edge.

Weight: 6 oz (170½ g)

Connector: 2 x 22 pin edge card connector with 0.156" (4 mm) contact centers. Key slots located between B & C and M & N.

Pin Assignments:

MODEL 222			
PIN	FUNCTION	PIN	FUNCTION
A	Power/Logic Common	M	Reserved
1	Reserved	N	Reserved
B	+24 VDC Power	13 & P	Spare
2	Reserved	14 & R	Spare
C	Reset	S	Spare
4 & D	Loop Input, Ch. 1	T	Spare
5 & E	Loop Input, Ch. 1	17 & U	Spare
F	Output #1 Relay (N.O.)	18 & V	Spare
H	Output #1 Relay (COM.)	W	Output #2 Relay (N.O.)
8 & J	Loop Input, Ch. 2	X	Output #2 Relay (COM.)
9 & K	Loop Input, Ch. 2	Y	Spare
L	Chassis Ground	Z	Spare

MODEL 222R			
PIN	FUNCTION	PIN	FUNCTION
A	D.C. (-) Common	N	Reserved
B	D.C. (+) Power	P	Spare
C	Reset	R	Spare
4 & D	Loop #1	S	Spare
5 & E	Loop #1	T	Spare
F	Output #1 Relay (N.O.)	U	Spare
H	Output #1 Relay (COM.)	V	Spare
8 & J	Loop #2	W	Output #2 Relay (N.O.)
9 & K	Loop #2	X	Output #2 Relay (COM.)
L	Chassis Ground	Y	Spare
M	Reserved	Z	Spare



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