

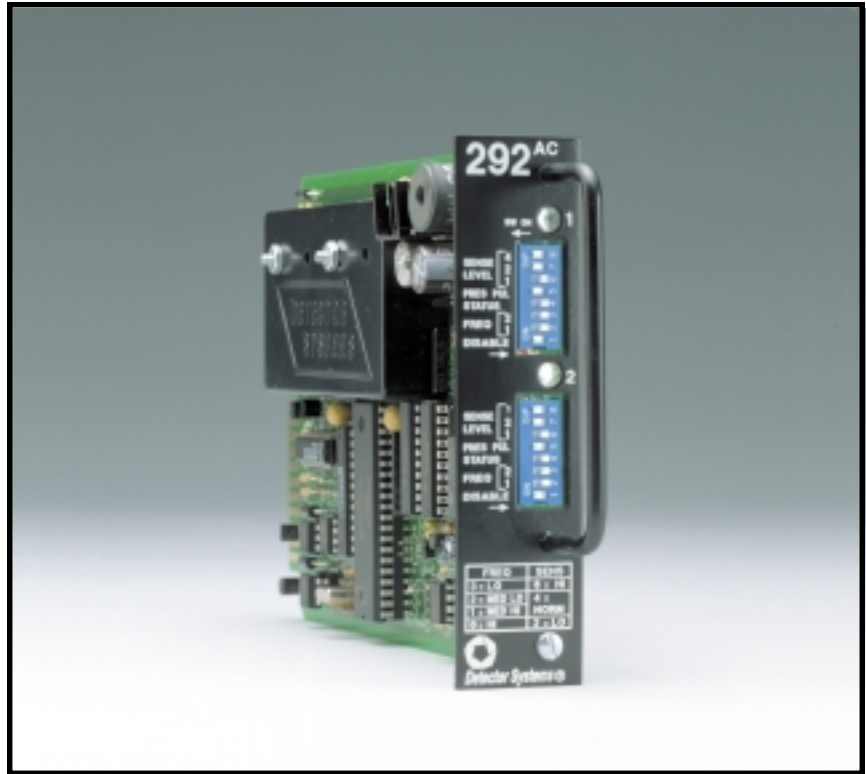
U.S. Traffic Corporation

Manufacturers & System Engineers

Model 292AC

General Purpose
Two Channel
Digital Inductive
Loop Detector

Meets NEMA TS 2
Specification



Features & Benefits

► **NEW!**

- Self-tuning and complete environmental tracking
- Two selectable modes per channel:
 - ✓ Presence, normal hold time
 - ✓ Pulse
- Status output provides individual channel status states as defined by NEMA TS 2
- Front panel indicator also displays status states
- DIP switches on front panel for sensitivity, frequency, and mode selections
- Eight levels of sensitivity per channel
- Detector can be assigned one of up to 15 addresses
- Four loop frequencies per channel
- Two detector channels in a single unit
- Loops are sequentially scanned, which helps eliminate crosstalk
- Complete low power CMOS digital design
- Operates on a single DC power supply
- Transformer isolation for loops
- High intensity multipurpose red LED indicators
- Front panel width is 1.12" (2.84 cm)
- Provision for communicating digitally with the detector



Specifications

Self-Tuning: Operational within one second after application of power or after a reset command. 30 seconds of operation is required before full presence time is possible.

Environmental and Drift Tracking: Fully self-compensating for environmental changes and component drift over full temperature range and entire loop inductance range.

Loop Inductance Range: 50 - 2,000 Microhenries with Q factor of 5 or greater.

Loop Feeder Length: Up to 2,000 ft (600 m) maximum with proper feeder cable and appropriate loops.

Loop Input: Transformer isolated.

Loop Frequency: Four selectable frequencies (normally in the range of 20-70 kilohertz) are provided for each channel.

Grounded Loop Operation: The loop isolation transformer allows operation with poor quality loops, including a single point short-to-ground.

Lightning Protection: The detector can tolerate, without damage, a 10 microfarad capacitor charged to 2,000 volts to be discharged directly into the loop input terminals, or a 10 microfarad capacitor charged to 2,000 volts discharged between either loop terminal and earth ground.

External Reset: Switch closure between DC 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 changing the sensitivity setting or by turning the channel off then back on using the disable switch.

Sequential Scanning: The two loops are alternately turned ON and OFF to minimize crosstalk.

Response Time: Measured with same SENS level setting on both channels.

Response Time Table:

SENSITIVITY	MAX RESPONSE TIME	SENSITIVITY	MAX RESPONSE TIME
Levels 0, 1, 2, 3, 4	7 milliseconds	Level 6	18 milliseconds
Level 5	11 milliseconds	Level 7	30 milliseconds

Sensitivity: Vehicle detection results from a sufficient negative change in loop inductance ($-\Delta L/L$). Note that the detector channel is reset automatically whenever the sensitivity level is changed.

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%

Detect Indicator Operation: Hi intensity red light emitting diode (LED) indicates:

- Call output
- Status for each detector channel

Modes:

- **PRES:** Presence mode with a hold time of 4 minutes minimum (regardless of vehicle size) and typically 20 to 30 minutes for a car. (Other times are possible by special order from the factory.)
- **PUL:** 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. Option: Pulse 250 ms.
- **STATUS:** Not truly a mode, this function permits the CALL indicator to display the last fault recorded in memory since last reset or power up. If no failure has occurred, indicator and output shall be in Condition 1. See power up for indicator display and output conditions.

Output Conditions Table:

MODE	POWER OK				POWER OUT
	Normal		Loop Failed		
	Car	No Car	Car	No Car	
PRES (Presence)	S	O	S	S	S
PUL (Pulse)	MS	O	S	S	S
STATUS	Displays the last fault recorded in memory since last reset or power up.				
S = Transistor saturated; O = Transistor off; MS = Transistor momentarily saturated (pulse). *When terminated to a NEMA defined input.					

Call Output Circuit Rating: Optically coupled transistors; 40 VDC maximum collector to emitter; 50 milliamps maximum collector current. The transistor saturation level is 1.2 VDC maximum. The output transistor is protected with a 47 volt zener diode connected across the emitter and collector.

Status Output Circuit Rating: An open-drain FET solid state output, with source connected to D.C. common, provides an output for each channel. A 47 volt zener diode is connected across the source and drain for transient protection.

Status Output Format: Status output format conforms to NEMA TS-2. Refer to operator's manual.

Specifications

Diagnostic Indications: The channel status output shall provide for the communication of eight distinct status states as defined in NEMA TS-2. Distinctive visual codes displayed by the CALL indicator are as shown.

Diagnosics Indications Table:

CHANNEL STATUS		TS2 OUTPUT		INDICATOR	CONDITION
		ON	OFF		
1	Normal operation	Continuous	–	ON*	Detector channel and loop OK
2	Detector Failure	–	Continuous	OFF*	Detector channel malfunction
3	Open loop	50 ms	50 ms	1 flash every 2 seconds	The open loop shall be reported when the terminal inductance is > 2500 microhenries
4	Shorted loop	50 ms	100 ms	2 flashes every 2 seconds	A shorted loop shall be reported when the terminal inductance is < 20 microhenries
5	Excessive inductance change	50 ms	150 ms	3 flashes every 2 seconds	When the nominal inductance of the loop changes more than ± 25%

* When MODE switch is in STATUS position.

Detector Address Capability: Four external address pins (Pins 3, 6, 10, and 15) provide the capability of activating the detector address feature and provide up to fifteen hard-wired addresses.

Data Receive/Transmit Provisions: External input and output lines provide a means of communicating with the detector to set and read detector parameters. Protocol presently being defined by NEMA Standards Committee.

Operating Power: 10.8 VDC to 26.5 VDC, 100 milliamps 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 (11.4 x 17.5 x 2.8 cm). Edge card connector is centered on the 4.5" (11.4 cm) edge.

Weight: 7 oz. (198.4 g)

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

Pin Assignments: (P1)

PIN	FUNCTION	PIN	FUNCTION
A	D.C. Common	13 & P	Reserved
1	Reserved	14 & R	Reserved
B	D.C. (+) Power	S	Reserved
2	Reserved	15	Detector Address Bit #2
C	Reset	T	Reserved
3	Detector Address Bit #3	16	Reserved
4 & D	Channel #1 Loop	17 & U	Reserved
5 & E	Channel #1 Loop	18 & V	Reserved
F	Channel #1 (Collector) (+)	W	Channel #2 (Collector) (+)
6	Detector Address Bit #0	19	Data Transmit (Tx)
H	Channel #1 (Emitter) (-)	X	Channel #2 (Emitter) (-)
7	Channel #1 Status Output	20	Channel #2 Status Output
8 & J	Channel #2 Loop	Y	Reserved
9 & K	Channel #2 Loop	21	Data Received (Rx)
L	Chassis Ground	Z	Reserved
10	Detector Address Bit #1	22	Reserved
11 & M	Reserved (AC Neutral)		
12 & N	Reserved (AC Line)		

Key slots located between B & C, E & F, M & N.

U.S. Traffic Corporation

Manufacturers & System Engineers

9603 John Street • Santa Fe Springs, CA 90670
Tel: (562) 923-9600 • Fax: (562) 923-7555
Toll Free: 1-800-733-7872 • www.ustraffic.net

Specifications are subject to change without notice to reflect improvements and upgrades.