U.S. Traffic Corporation

Manufacturers & System Engineers

Model 283LA

Dual Channel Digital Loop Detector with Automatic Vehicle Identification on Both Channels

Features & Benefits

- Self-tuning & complete environmental tracking
- Low power C-MOS design
- Transformer isolated loop inputs
- High intensity LED indicators
- Thumbwheel switches for sensitivity settings (9 levels per channel)
- The Winky-Blink™ loop monitor remembers and indicates intermittent and failed loops
- Three selectable modes of operation
- Multi-code AVI detector with 19,683 programmable codes, which may be viewed in real time
- Provides AVI detection and standard vehicle detection from a single roadway loop
- The AVI status can be transmitted to a local controller or PC via the RS-232 port for preemption control or data logging
- Meets all applicable NEMA specs

iDC Detector Systems®

TRAFFIC CONTROL SYSTEMS SECTION NEMA MEMBER

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Specifications

Self-Tuning: The detector is automatically, fully operational within 1 second after application of power or a manual reset command. Note, 30 seconds is required before full presence time is possible.

LoopComm™: Standard vehicle detection plus inductively coupled communication, LoopComm™, with a vehicle transmitter (IDC Model 600A) through a single, standard roadway loop.

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: 20 to 750 microHenries with Q factor of 5 or greater. Note: When not using LoopComm™, the inductance range is 20 to 2500 microHenries with Q factor of 5 or greater.

Loop Feeder Length: Up to 300 feet (91 m) maximum, with proper feeder cable and appropriate loops.

Loop Input: Transformer isolated.

Reset Control: Switch closure between D.C. Common (Pin A) and the reset line (Pin C) for 15 microseconds or longer will reset both detector channels. (Note that the detector channel is reset automatically whenever the sensitivity level is changed or a remote reset is issued via the serial port.)

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

Faulty/Intermittent Loop Monitor: If the total inductance of the detector input network goes out of the range specified for the detector or suddenly changes more than 25%, the detector will immediately generate a Failsafe continuous output (CALL) in either presence mode or pulse mode, and the front panel fault LED will begin repeating bursts of 3 blinks, the Winky-Blink™ mode. This Failsafe condition will continue until the inductance returns to its previous value at which time the detector output will automatically resume normal operation. However, the fault LED will continue in the Winky-Blink™ mode until the detector is manually reset or a power interruption occurs. The fail status report is also available on the serial port. This feature helps identify intermittent loop problems not present during troubleshooting. (The detector input network consists of the loop or loops plus the feeder [lead-in or home run] cable up to the connector on the detector.)

Loop Frequency: Three frequencies (normally in the range of 20 to 50 kiloHertz) are switch selectable on the front panel for each channel. The detector should be manually reset following a change in loop frequency setting.

Sensitivity: Vehicle detection results from a sufficient negative change in loop inductance (ΔL/L). Nine detection sensitivity levels, plus OFF, are switch selectable per channel. (Note that the detector channel is reset automatically whenever the sensitivity level is changed.)

SENSITIVITY	ΔL/L	SENSITIVITY	ΔL/L
Level 9	0.0025%	Level 4	0.08%
Level 8	0.005%	Level 3	0.16%
Level 7	0.01%	Level 2	0.32%
Level 6	0.02%	Level 1	0.64%
Level 5	0.04%	Level 0	OFF

Mode: Three modes of operation are determined by the front panel Mode switch:

- √ NORM: is a presence mode with a hold time of 4 minutes minimum (regardless of vehicle size) and typically 20 to 30 minutes a car.
- √ LONG: is a presence mode with a hold time of 4 minutes minimum (regardless of vehicle size) and typically 60 to 90 minutes for a car.
- √ PULSE: is a pulse mode with a pulse of 125±25 ms. duration generated for each vehicle detected. Each detected vehicle is instantly tuned out if it remains in the loop detection zone longer than 2 seconds. This enables detection of subsequent vehicles entering the detection zone. As each vehicle leaves the detection zone, the detector resumes full sensitivity within 0.75 seconds.

Channel Off State: While the channel sensitivity switch is set to ZERO, the channel output is disabled and the channel is reset.

Response Time: Response time is defined with both channels set to the same sensitivity level and loop frequency is approximately 40 KHz.

SENSITIVITY	ΔL/L	SENSITIVITY	ΔL/L
1	5 milliseconds	6	20 milliseconds
2	5 milliseconds	7	40 milliseconds
3	5 milliseconds	8	80 milliseconds
4	7 milliseconds	9	160 milliseconds
5	10 milliseconds		

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

Fault Indicator Operation: High intensity red light emitting diode (LED) indicates the fault status of the loop for each detector channel. During the fault condition, the indicator is on steady. If it is a past fault condition, it will display the Winky-Blink™ signal.

ID Indicator: High intensity red light emitting diode (LED) indicates the presence of a vehicle equipped with a valid, coded AVI transmitter.

Receiving Range: The transmitter on the vehicle must be directly over the area enclosed by the roadway loop at a height not to exceed 4 ft. (1.2 m).

Receiver Code Capability: The receiver can be remotely set to respond to specific codes out of the standard 19,683 codes available and shall pass these codes to the RS-232 port.

Output Circuits (Solid State): Optically coupled transistors; 40 VDC maximum collector to emitter; 50 milliAmps maximum collector current. The transistor saturation level is 1.2 VDC maximum when the detector is in the CALL condition. The transistor is OFF for the NO CALL condition. The output transistor is protected with a 47 volt zener diode connected between the emitter and collector. The output can be programmed to be active with a valid ID or provide a call when a vehicle is present. The output mode of operation is selected by a jumper on the detector main board.

Power: 16 to 30 VDC, 130 mA max. without AVI communication and 160 mA max. during AVI communication.

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 x 175 x 28 mm). Edge card connector is centered on the 4.5" edge.

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

Pin Assignments:

PIN	FUNCTION	PIN	FUNCTION
A	D.C. (-) Common	N	Spare
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 Collector	U	Spare
H	Output #1 Emitter	V	Spare
8 & J	Loop #2	W	Output #2 Collector
9 & K	Loop #2	X	Output #3 Emitter
L	Chassis Ground	Y	Spare
M	Spare	Z	Spare

Connector (J1): Front panel 9 pin D-Sub female RS-232 C Connect for LoopComm™.

Pin Assignments (J1):

PIN	FUNCTION
1	RTS
2	RxD data into LoopComm AVI
3	TxD data out of LoopComm AVI
4	CTS
5	D.C. Common
6	Spare
7	Spare
8	Spare
9	Spare

Local Address: The receiver has a four position DIP switch mounted on the PC board. This switch will program the individual local address for each detector channel.

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