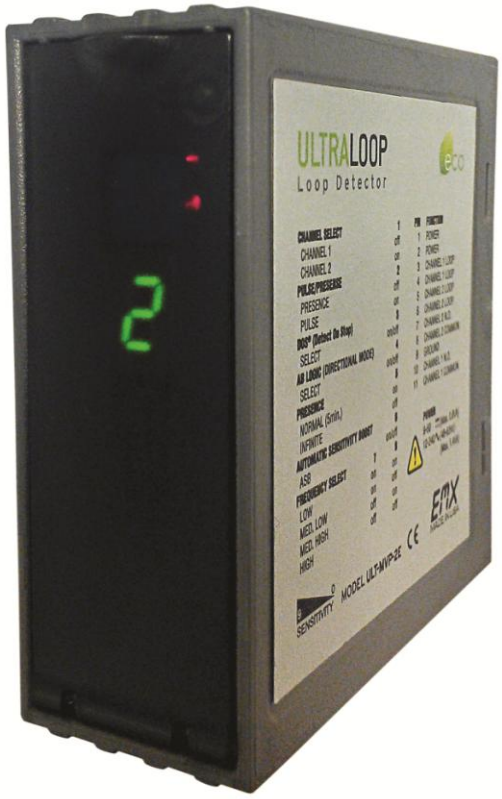
OPERATING INSTRUCTIONS

ULT-MVP-2

ULTRALOOP®

TWO-CHANNEL VEHICLE LOOP DETECTOR



EMX INDUSTRIES, INC.

4564 Johnston Parkway, Cleveland, Ohio 44128

P. 800 426 9912 **F.** 216 518 9884

Sales Inquiries: salessupport@emxinc.com

Technical Support: technical@emxinc.com

www.emxinc.com

Contents

Cautions and Warnings

CE REQUIREMENT: *Use EMX Pre-formed loops with built-in surge suppression for CE compliance. Connect shield on lead in wire to earth ground.*

CE REQUIREMENT: *Use CE rated power supply for CE compliance providing suppression as specified by EN61000-4-5.*

Not to be used in personal safety applications.

When more than one loop detector is used, set each one to a different frequency. Refer to DIP switch diagram for frequency settings.

To reduce the risk of electric shock, do not remove cover or back panel. There are no user-serviceable parts inside.

Refer servicing to qualified service personnel.

Unit must be (earth) GROUNDED

Install in a properly rated enclosure (detector is IP30)

Power to this device must have short circuit and over current protection (0.25A to 0.5A)

IMPORTANT:
This product is an accessory or part of a system. Always read and follow the manufacturer's instructions for the equipment before connecting this product. Comply with all applicable codes and safety regulations. Failure to do so may result in damage, injury or death.

Product Overview

The ULT-MVP-2™ is a 2 channel vehicle loop detector compatible with most gate operators. The ULT-MVP-2 may be used in Center, Safety and Exit loop positions. The UltraMETER™ display feature makes set-up easy by displaying the optimum sensitivity setting required to detect a vehicle positioned on the loop. Ten sensitivity settings allow for fine adjustment of the detection level. The UltraMETER™ also provides for the display of channel setup operating parameters and loop frequency.

The ULT-MVP-2 provides relay contact outputs indicating vehicle presence for each channel separately and AB logic for direction indication. The relay output for each channel may be set for pulse or presence, or the new EMX feature, Detect On Stop (DOS®). The ULT-MVP-2 features automatic sensitivity boost (ASB) and infinite or normal (5 minute) presence. Four frequency settings provide flexibility in preventing crosstalk in multi-loop applications.

MODEL DESCRIPTION:

ULT-MVP-2E ULTRA MVP Vehicle loop detector dual output, AC/DC EU wiring

ULT-MVP-2U ULTRA MVP Vehicle loop detector dual output, AC/DC US wiring

Specifications

Specifications	
Sensitivity	10 levels, 0-9
UltraMETER™ Display	Indicates optimum sensitivity level, 0-9 Channel parameter display Diagnostic aid Loop fault indicator
Loop frequency	4 settings (low, med-low, med-hi, high)
Loop inductance	20...1000µH (Q factor ≥ 5)
Grounded loop	Isolation transformers allows operation with poor quality loops
Automatic tuning	Detector tunes to loop on power-up and following frequency count function
Environmental tracking	Automatic compensation
Surge protection	Loop circuitry protected by surge suppressors (gas discharge)
Channel 1 relay	SPST relay contacts (form A)
Channel 2 relay	SPST relay contact (form A)
Contact rating (resistive load)	2A @ 30VDC, 0.5A @ 125VAC
Detect / frequency count indicator	Red LED for each channel
Detect On Stop	Requires vehicle to stop for a minimum of 1 second (1-2s typical)
ASB (Automatic Sensitivity Boost)	Increases sensitivity after initial detection to prevent dropout due to high-bed vehicles
Power (see Cautions and Warnings)	12...60 VDC (Max. 0.8 VA) 12...240 VAC (48...62Hz) (Max. 1.4 VA)
Operating current (standby/detect)	25mA/50mA
Operating temperature	-40˚C...82˚C (-40˚F...180˚F) 0...95% relative humidity
Dimensions (L x W x H)	73mm (2.9”) x 38mm (1.2”) x 78mm (3.1”)
Enclosure	IP30
Circuit protection	Conformal coating
Weight	0.25 lbs. (113 g)
Connector	11 pin male connector (JEDEC B11-88)

Operation

Power up

Upon power up the detector initializes by automatically tuning to the loops. The clockwise rotation of the green segments on the UltraMETER indicates that the detector is powered and operational.

Frequency setting

The operating frequency of the loop is a function of the specific loop inductance and DIP switch settings 7 and 8. The primary purpose of the frequency setting is to allow the installer the ability to set different operating frequencies for multi-loop installations, recommended to prevent crosstalk/interference from adjacent loops. After changing the frequency setting, press the Frequency Count switch to re-initialize the detector. To check the operating frequency of a loop, refer to the Frequency Count section. To determine whether crosstalk between adjacent loops is occurring, refer to the UltraMETER™ Sensitivity Display section.

UltraMETER™ Sensitivity Display

The UltraMETER™ sensitivity display simplifies the installation process by displaying the sensitivity setting required to detect a vehicle on the loop. To use this feature use DIP switch 1 to select Channel 1 or Channel 2. Observe the display while a vehicle is moving into position on the loop, note the number displayed, then adjust the sensitivity setting (rotary switch) to the displayed position.

During normal operation, when a vehicle is not on the loop, the display is blank. The effects of crosstalk or other interference can be observed on the display when the loop is vacant. Interference or crosstalk will cause the display to indicate a level, typically 8 or 9. It may be necessary to observe the display for a minute or so to see this effect. Change the frequency setting to prevent crosstalk.

Sensitivity setting

The 10-position rotary switch allows for precise adjustment of detection level. The sensitivity level increases from position 0 thru 9 with position 0 being the lowest sensitivity. Typical applications require a setting of 3 or 4. To use this feature, observe the UltraMETER™ display while a vehicle is moving into position on the loop, note the number displayed, then adjust the sensitivity setting (rotary switch) to the displayed position.

DOS™ (Detect On Stop)

The Detect-On-Stop feature requires that a vehicle must come to a complete stop over the loop for a minimum of 1 second (typical 1-2s) before the Channel output activates.

Automatic Sensitivity Boost

The Automatic Sensitivity Boost causes the sensitivity to increase following initial detection. This feature is useful to prevent dropout when detecting high-bed vehicles. The sensitivity returns to its normal setting after the vehicle exits the loop. The decimal point on the display indicates ASB is on.

Presence output

The Presence settings provides two selections, the output can be set for Infinite Presence or Normal Presence. Infinite Presence causes the output to remain in detect mode as long as the vehicle remains on the loop. Normal Presence causes the output to reset after 5 minutes**. DO NOT USE THE NORMAL PRESENCE SETTING UNLESS THE OPENING IS PROTECTED BY A SECONDARY SAFETY DEVICE SUCH AS THE EMX IRB PHOTOEYE.**

AB Logic (Directional mode)

AB LOGIC Presence Mode is a direction logic mode, and is capable of determining direction of travel of a vehicle. Two loops are laid in the direction of travel to provide the input for this mode.

If a vehicle enters Channel 1 Loop and then proceeds to Channel 2 Loop, Channel 1 relay contacts will close for the duration of that the vehicle is over Channel 2 Loop (unless PULSE is selected.

If a vehicle enters Channel 2 Loop and then proceeds to Channel 1 Loop, Channel 2 relay contacts will close for the duration of that the vehicle is over Channel 1 Loop (unless PULSE is selected).

Pulse/Presence output

The pulse/presence switch allows the output relay to be configured for presence or one-second pulse on entry operation. When set to presence, the output relay remains activated while the vehicle is present on the loop.

The following operational parameters may be set separately for each Channel:

- SENSITIVITY
- PULSE/PRESENCE
- DOS (Detect on Stop)

Viewing Existing Channel Parameters

To view the parameters, set the DIP switch position 1 to OFF for Channel 1 or ON for Channel 2. Press the Channel Set-Up switch. The display will rotate through the current parameters according to the table below. To exit without changing any settings press the Channel Set-Up switch.

Setting Channel Parameters

1. Set the Channel selection switch to display Channel 1 by setting DIP 1 to OFF or display Channel 2 by setting DIP 1 to ON
2. Press the Channel Set-Up switch to enter the program mode.
3. Adjust the Sensitivity to the desired position per instructions.
4. Set the PULSE/PRESENCE and DOS switches as necessary.

   If any settings are changed while in this mode the display decimal point will turn on. Settings are saved upon exit.

Display Operation for Channel Parameters

After pressing the Channel Set-Up switch the display will continuously rotate through the set-up parameters for the selected channel.

DISPLAY CHARACTER	PARAMETER	VALUE
C	CHANNEL #	1 or 2
S	SENSITIVITY	0,1,2...9
F	LOOP FREQUENCY	X X X kHz
Pu	PULSE (PRESENCE)	0 = PRESENCE....1 = PULSE
d	DETECT ON STOP	0 = off....1 = on

Controls and Indicators

CHANNEL SET-UP SWITCH

Press to enter Channel Set-up mode

DETECT INDICATOR

	Red LED
Channel 1 detection	on
Channel 1 loop fault	flashing
Channel 2 detection	on
Channel 2 loop fault	flashing

SENSITIVITY SETTING

	Position 0.....9
Sensitivity	Low.....high

ULTRAMETER™ DISPLAY

Indicates sensitivity setting required to detect vehicle

CHANNEL SELECT

	DIP switch position 1
Channel 1	off
Channel 2	on

PULSE/PRESENCE

	DIP switch position 2
PRESENCE	off
PULSE	on

DOS® (DETECT ON STOP)

	DIP switch position 3
SELECT	on/off

AB LOGIC (DIRECTIONAL MODE)

	DIP switch position 4
SELECT	on/off

PRESENCE

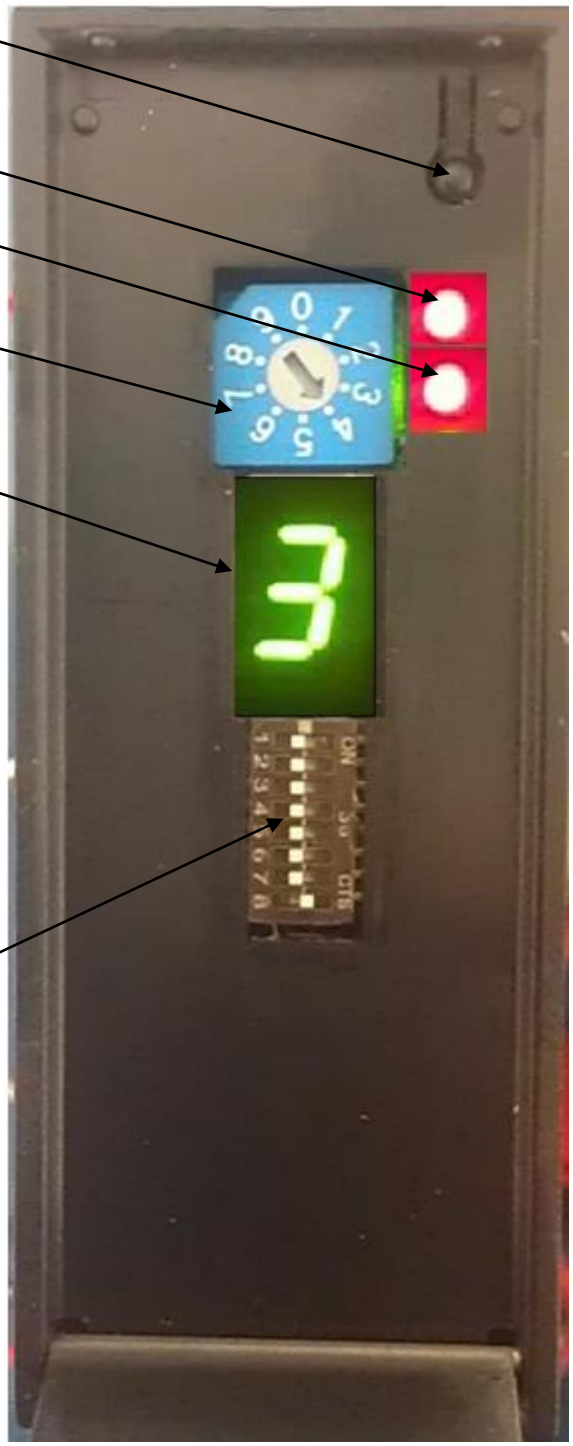
	DIP switch position 5
NORMAL (5 min.)	on
INFINITE	off

AUTOMATIC SENSITIVITY BOOST

	DIP switch position 6
ASB enabled	on

FREQUENCY SETTINGS

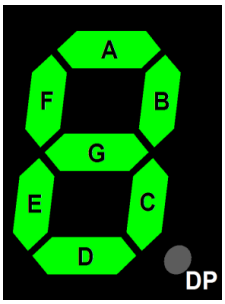
	DIP switch position	
FREQUENCY	7	8
Low	on	on
Medium low	on	off
Medium high	off	on
High	off	off



Controls and Indicators (continued)

Loop Fault Indicators

SEGMENT	FAULT DESCRIPTION
a	Channel 2 range error (frequency outside acquisition target +/- 20%)
b	Channel 2 frequency high (>150kHz)
c	Channel 2 frequency low (<20kHz)
d	Channel 1 range error (frequency outside acquisition target +/- 20%)
e	Channel 1 frequency low (<20kHz)
f	Channel 1 frequency high (>150kHz)
DP	ASB on



Connections

Function	ULT-MVP-2E (EURO)	ULT-MVP-2U (USA)
Channel 1 loop	3	7
Channel 1 loop	4	8
Channel 2 loop	5	10
Channel 2 loop	6	11
Shield – EARTH GROUND	9	4
Power *	1	1
Power *	2	2
Channel 1 Output – N.O.	10	6
Channel 1 Output – COM	11	5
Channel 2 Output – N.O.	7	3
Channel 2 Output – COM	8	9

*** Refer to power requirements and contact ratings in SPECIFICATIONS table, page 3**

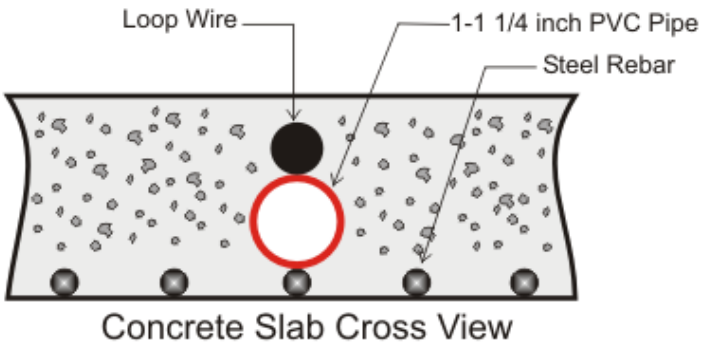
Troubleshooting

Symptom	Possible cause	Solution
Red LED flashes	**Loop wire shorted or open**	Check LOOP FAULT INDICATORS. Check loop resistance on the appropriate loop pins on the control board connector, between .5 ohms and 5 ohms.
Detector remains in detect after vehicle has left loop	**1. Faulty loop 2. Poorly crimped terminals 3. Loose connections**	1. Perform megger test from loop lead to ground, should be >100 megaohms 2. Check loop connections to terminals 3. Check splices are properly soldered and sealed against moisture 4. Observe ULTRAMETER display, level indicated on display indicates residual frequency shift from vacant loop to vehicle presence, press Frequency Count switch to re-initialize the detector
Intermittent detection	**1. Faulty loop 2. Poorly crimped terminals 3. Loose connections 4. Cross-talk between adjacent loops**	1. Perform megger test from loop lead to ground, should be >100 mega ohms 2. Check loop connections to terminals 3. Check splices are properly soldered and sealed against moisture 4. Set adjacent loops to different frequencies (see Frequency Setting)
No detection	**1. Loop wire shorted or open 2. Loop sensitivity set too low**	1. Check loop resistance on the appropriate loop pins on the control board connector, between .5 ohms and 5 ohms. 2. With vehicle on loop, observe ULTRAMETER display, set sensitivity to the level indicated on the display

Loop Installation

NEW SLAB POUR

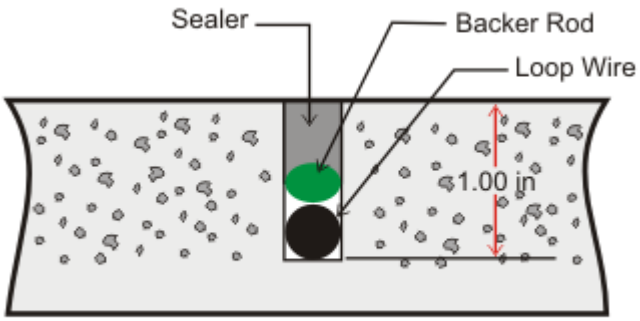
Ty-wrap 1-1/4" PVC pipe to the top of the rebar in the size and configuration of the loop (ex. 4' x 8'). Then ty-wrap the loop to the top of the PVC frame. This stabilizes the loop during the pour and separates it from the rebar.



Concrete Slab Cross View

SAW CUT EXISTING SURFACE

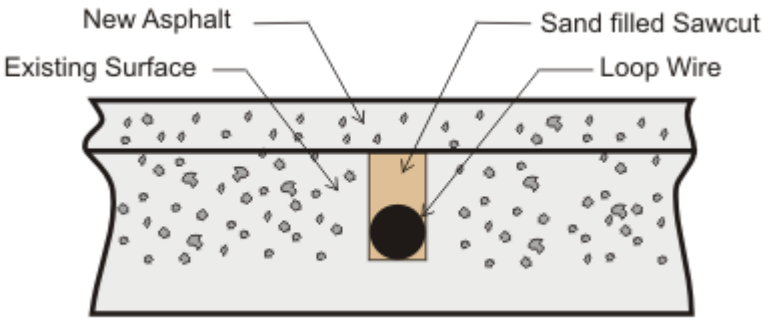
Cut 1" deep into the existing surface, place a 45° cut at the corners to prevent sharp edges from damaging the loop wire. Notch out for the "T" connection where the lead wire connects to the loop. Remove all debris from the finished cut with compressed air. Place the loop into the saw cut. Place backer material into the saw cut over the loop wire and pack tightly. Place a high-quality sealer over the saw cut to seal the surface.



Concrete Slab Cross View

RESURFACE ASPHALT

Saw cut the existing surface ¾" deep and place a 45° cut at the corners to prevent sharp edges from damaging the loop wire. Remove all debris from the finished cut with compressed air. Place sand over the loop wire to the surface and pack tightly. Lay new asphalt.



Asphalt Re-surface

General Installation Guidelines

- Use EMX Lite Preformed loops for quick, reliable installations and for CE compliance.
- Lead-in wire (wire from loop to detector) must be must be twisted a minimum of 6 turns/ foot to avoid the effects of noise or other interference.
- Detection height is approximately 70% of the shortest side of the loop. Example: detection height for an 4' x 8' loop = 48" x .7 = 33.6"

Ordering Information

ULT-MVP-2E **ULTRA MVP Vehicle loop detector dual output, AC/DC EU wiring**

ULT-MVP-2U **ULTRA MVP Vehicle loop detector dual output, AC/DC US wiring**

Accessories

PR-XX **EMX Lite Preformed Loops™**

Warranty

EMX Industries Incorporated warrants all products to be free of defects in materials and workmanship for a period of two years under normal use and service from the date of sale to our customer. This warranty does not cover normal wear and tear, abuse, misuse, overloading, altered products, damage caused by incorrect connections, lightning damage, or use other than intended design.

There is no warranty of merchantability. There are no warranties expressed or implied or any affirmation of fact or representation except as set forth herein.

EMX Industries Inc. sole responsibility and liability, and the purchaser's exclusive remedy shall be limited to the repair or replacement at EMX Industries option of a part or parts found not conforming to the warranty. In no event shall EMX Industries Inc. be liable for damages, including but not limited to damages resulting from non-conformity, defect in material or workmanship.

Effective date: January 1st, 2002

EMX INDUSTRIES, INC.

4564 Johnston Parkway
Cleveland, Ohio 44128
United States of America
www.emxinc.com

Technical Support: (216) 834-0761
technical@emxinc.com

Sales: (216) 518-9888
Fax: (216) 518-9884
salessupport@emxinc.com

Revision 1.0
6.18.15