LARGE SPEED INDICATION SIGN

Model: MV lsid

Operation

&

Maintenance Manual

Version 1.0

Content

Release / Change	Version	Release Date
Initial Release	1.0	July 2023

1. Safety Instructions

WARNING: Ensure all safety instructions have been followed prior to servicing.

WARNING: Ensure that no items fall onto the lanes below at any time.

WARNING: Safety helmet and safety belt must be worn to avoid personal injury.

WARNING: The equipment is powered by 230VAC. Power must be shut down during maintenance and when not testing.

CAUTION: When the door/cover of the equipment is opened, please ensure it is fixed before performing next procedure. After finishing maintenance, ensure the door/cover is locked.

CAUTION: The LEDs on LED Module of the equipment are ESD (Electro-Static Discharge) sensitive. Take necessary precautions to prevent damage to the LED.

1.1. Health and Safety

All personnel involved in carrying out the work must be aware of any site working regulations and required certification.

Before taking any installation or maintenance action, service personal must follow the above safe working practices:

- Only allow sufficiently experienced personnel to do maintenance.
- Provide sufficient illumination for the job, especially during non-daylight hours.
- Wear personal protective gear when working near or with energized parts.
- Use insulated tools and equipment when working near or with energized parts.
- Take measures to avoid inadvertent contact of conductive materials or equipment with energized parts of VMS

WARNING – HIGH VOLTAGE

The VMS is a 12 VDC device. Harding Traffic cannot guarantee that high voltages may not have been introduced as part of the installation e.g. 230VAC : 12VDC Power Supply.

Service Personal must ensure that the system is suitably isolated before working on the VMS

CAUTION – HEAVY EQUIPMENT

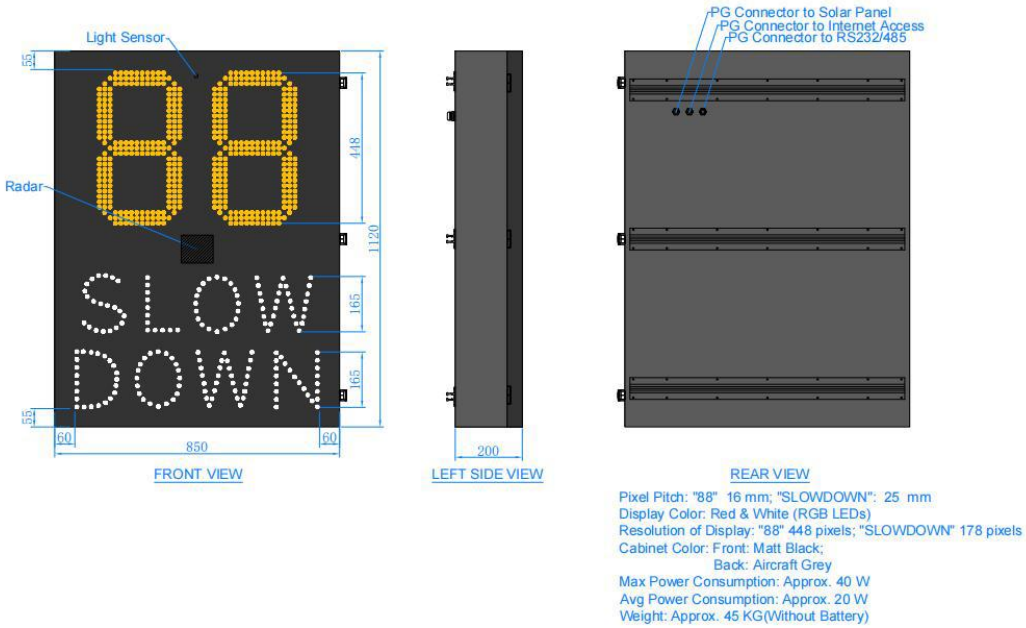
The VMS should be adequately supported during installation, replacement or maintenance. All lifting and moving jobs must be performed by mobile crane or other suitable lifting device.

2. General Overview

2.1. Cabinet Specifications

Rear Access

Cabinet height:	1120mm
Cabinet width:	850mm
Cabinet thickness:	200mm
Weight:	45kg without Batteries
Cabinet Material:	Aluminium
Paint Colour:	Front – Matt Black
	Rear – Aircraft Grey
Maintenance method:	Front Access
Pixel Pitch:	**P**16 - “88”; P25 “SLOWDOWN”



2.2. Optical Characteristics

Luminance	EN12966	L3
Luminance ratio	EN12966	R3
Colour	EN12966	C2
Beam width	EN12966	(H: 30°, V: -10°)

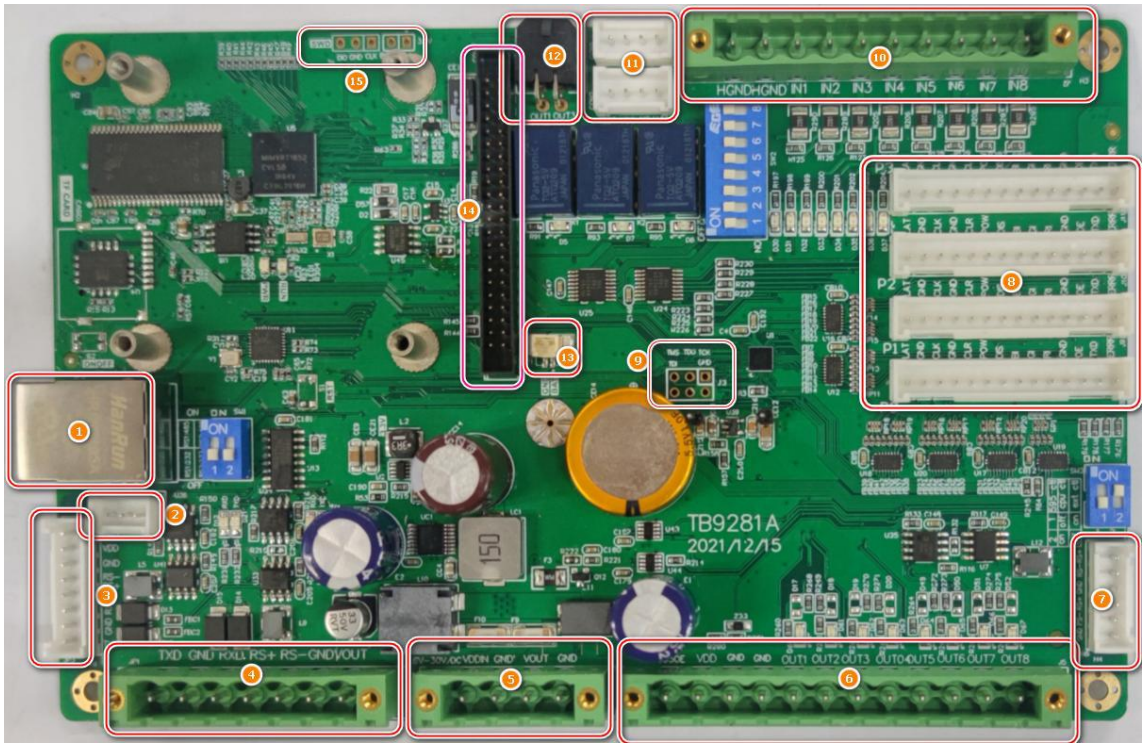
2.3. Electrical Characteristics

Power supply	12V/24V DC
Power consumption (Max)*	50W
Power consumption (Average)	20W
Internal voltage - LED boards	4.2VDC
Internal voltage - Controller	5VDC

*Max power consumption is only ever achieved within a manually initiated test. Max power is with all LED's on, in white and manually set to full brightness.

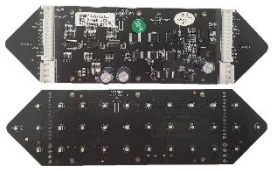
2.4. Major Components

2.4.1 CPU / Controller Card - 9281

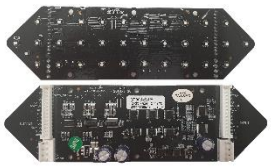


No.	Name	Description	
1	Network interface-RJ45	Ethernet interface for major network	
2	Console serial port	TTL3.3V, to connect software	
3	Radar RS232+RS485 PORT	RS232/RS48 port for customer to self-define CZ9281, switch P1 to choose RS232 or RS485	
4	PC RS232+RS485 PORT	RS232/RS48 port for Customer to self-define CZ9281, switch P2 to choose RS232 or RS485	
5	Power port	To connect with 4.6V-26V power input	
6	8 output control port	To control wigwag	
7	Extended RS485 port	For additional device	
8	LED panel port	Connect to the LED Panel (EN port)	
9	FPGA download port	2x3P FPGA download port	
10	External voltage signal isolation input	HGND: External voltage IN1-8:voltage input	
11	Light sensor port	To connect with environment light sensors; two can be connected.	
12	Relay Port	To connect relay and public terminal	
13	Spare battery port		
14	Hub board port	Supply 5V power and GND, the max output 7.5W	
15	CPU Download port	To download CPU program	

2.4.2 Other components



6 pcs MV 8599



8 pcs MV 8600

1 pcs MV 8541B-1

1 pcs MV 8541B-2

1 pcs MV 8728

1 pcs MV 9281D

1 pcs MV 9140E

1 pcs MV LTK1DS

1 pcs MV CZ100

CODE	DESCRIPTION
MV 8599	LED TILE DIGIT “88” HORIZONTAL (LSIDV2)
MV 8600	LED TILE DIGIT “88” VERTICAL (LSIDV2)
MV 8541B-1	LED TILE CHARACTER “SLOW” ((LSIDV2)
MV 8541B-2	LED TILE CHARACTER “DOWN” ((LSIDV2)
MV 8728	DC-DC BOARD ((LSIDV2)
MV 9281D	VMS CPU/MOTHER BOARD ((LSIDV2)
MV 9140E	SOLAR CHARGER 12/24V IMPOSA 110-7403
MV LTK1DS	CABINET DOOR SWITCH LTK-1 (ITS-02-01)
MV CZ100	INTERNAL RADAR

3. Maintenance Guide

3.1. Maintenance Tool List

Maintenance Tool List			
Item	**Tool**	**Quantity**	**Remarks**
1.	Torx screwdriver	1	
2.	Long Phillips screwdriver	1	
3.	Slotted screwdriver	1	
4.	Multimeter	1	
5.	Cabinet Keys	1	

3.2. Preventative Maintenance

To ensure the continued optimal performance and longevity of your LSID in challenging environments, regular preventive maintenance is recommended. By following these guidelines, you can mitigate potential issues and extend the lifespan of your product:

Cleaning Schedule: Establish a routine cleaning schedule based on the local conditions and usage. While the standard recommendation is maintenance every six months, consider more frequent cleaning if the environment is particularly harsh.

Cabinet Maintenance:

a. Employ a pressure cleaner to clean the rear of the cabinet, removing accumulated dirt and grime.
b. Regularly check the cabinet's interior by opening the door. Evaluate the operational status and address any anomalies promptly.

Record Keeping: Maintain a record of maintenance activities, including dates, procedures performed, and observations made. This documentation can help track the product's health and guide future maintenance decisions.

Professional Inspection: Periodically, consider engaging professional technicians to conduct a thorough inspection of the LSID. Their expertise can identify potential issues that might not be apparent during routine maintenance.

Faults	Action
Check if there are marks, scratches, dirt or cracks on the front windows	Use a suitable cleaning solution to remove them
Observe if the LSID is receiving correct messages from the management system	If not, report fault to Harding Traffic Ltd
Check if the door locks are secured tightly or any parts are broken	If not, insert the required key in the lock and turn clockwise to tighten or change the parts.
Check if all the cable glands are secured tightly.	If loose, push in the gland and ensure they are secured connected.

3.3. Cabinet Maintenance

Because of its ability to withstand extremely harsh environments, the LSID requires minimal maintenance. However, regular maintenance can help prolong the product's lifespan and ensure optimal display performance.

The suggested maintenance interval is every six months, although this duration can be adapted based on the local conditions..

Maintenance tool:

- Gentle non-woven fabric or a soft brush
- Neutral cleaning solution (non abrasive)
  Basic maintenance equipment

Recommended Maintenance Procedure

1) Moisten a cloth with the cleaning solution, then use it to gently wipe away dust from the display surface. Rinse the surface with water afterwards. (For a thorough clean, a pressure cleaner can be employed, utilizing commonly accepted techniques similar to washing cars.
2) The back of the cabinet can also be cleaned using a pressure cleaner.
   Following the VMS wash, open the door to inspect and assess the operational status within the cabinet.

Trouble Shooting

Item	Description	Solution
No Display	**VMS does not respond and cannot be lit**	1. Check power supply: • Check Connections • Check Input Voltage • Check inputs
	Full screen display flower screen	1. Picture overlap, part of the picture is missing, screen position shift etc, please contact Harding Traffic
	Tile/s failure including LED is always on, bright / dim, flashing or color patches	One module display is not working or has abnormal brightness: • Check power cable for the module • Check Signal Cable for the module • Swap module with another to determine if the fault is related to the input or elsewhere Multiple modules are not working or have abnormal brightness • Check the power supply to the modules
Functional problem	**Optical sensor problem**	• Check whether the Optical sensor connector is reliably connected to the CPU / Controller Card • Check whether the Optical Sensor wire is damaged • Swap with another light sensor to confirm whether the issue is with the sensor or elsewhere
	Door sensor	• Check whether the door switch connector is reliably connected to the CPU / Controller Card • Check if the contact of the door sensor is operating (normally open – closes when door is shut) • Swap with another door switch to confirm whether the issue is with the sensor or elsewhere • If the above method still cannot solve the problem, please contact the manufacturer's professional and technical personnel for handling.

In all other cases, please contact Harding Traffic on 09 259 0894 or at service@hardingtraffic.co.nz