# LDC EQUIPMENT

# LDC VMS 1C Operation and Programming



# VMS Touch Screen Hand Controller







Manufactured by Giga Signs a Quality Management System Approved to AS/NZS ISO 9001:2008 – Reg. C31071

# **IMPORTANT SAFETY INSTRUCTIONS**

- Always use the VMS unit in a safe manner as per AS 4852.2.
- Do not attempt to use the programmer unit at any time while the vehicle is in motion.
- Sign must <u>not</u> be raised unless stabilizer legs have been deployed.

# MAINTENANCE

- Solar panels should be cleaned weekly (more often depending on environmental factors) for best performance.
- The sign and programmer units contain no user serviceable parts. Should a malfunction occur, please contact the supplier of the system for assistance. Any tampering with the internal parts of the sign or programmer unit will void the warranty.
- The sign and programmer unit cannot be damaged by incorrect operation. If there is no response, please check that the battery voltage is above 10 volts, then disconnect and reconnect the communication cable on the sign.
- If the battery voltage is below 10 volts, the unit will need to be recharged by exposing the solar panels to direct sunlight or connecting a suitable battery charger.
- The touchscreen hand controller (where supplied) is not weatherproof, and must not be allowed to get wet. Store the controller in the weatherproof container supplied at all times when not in use.
- Read ALL INSTRUCTIONS before using this VMS.

### Contents

Definitions	.4
1. On Site Preparation	.5
1.1. Sign Positioning	.5
1.2. Raising the Sign	.6
1.3. Rotating the Sign	.7
1.4. Leaving the Sign Unattended	.8
2. Set up for Programming	.9
2.1 Disabling the SIM card PIN number	.9
2.2 Inserting the SIM Card1	0
3. Programming1	1
3.1 Introduction1	1
3.2 Hand Controller Operation1	1
3.2.1 Message Creation1	2
3.2.2 Run Pre-set or Saved Messages1	6
3.2.3 Time & Date Setup1	7
3.2.4 General Settings1	8
3.2.5 RADAR Setup1	9
3.2.6 SMS Passwords Setup2	20
3.2.7 Other Features	21
3.3 PC-Based Program (VMS Director)2	22
3.4 i-Key (Digital Key)2	23
3.5 SMS Programming2	24
3.5.1 Turn Off2	25
3.5.2 Turn On (Resume)2	25
3.5.3 Request Status (Query Status)2	25
3.5.4 Select Messag2	25
3.5.5 Message Store	26
3.5.6 Displaying Graphic2	26
3.5.7 Displaying RADAR2	26
3.5.8 Display/Blank Times2	27
3.5.9 Message Justification2	27
3.5.10 Message Store and Run2	27
3.5.11 Demo Messages2	28
3.5.12 Character Translations to Symbols2	28
Appendix A. SMS Graphics2	29
Appendix B. Pre-set Messages	31

# Definitions

#### Daylight Saving Time (DST)

Also known as summer time, this is the practice of advancing clocks so that evenings have more daylight and mornings have less. Typically clocks are adjusted forward one hour near the start of spring and are adjusted backward in autumn.

#### Device ID

Device ID is a distinctive number associated with any VMS.

#### Emitter

The basic light-emitting component used. This can be a single LED, or a cluster of LEDs bound together and energized as a single component.

#### FTP

File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host or to another host over a TCP-based network, such as the Internet.

#### LOG

Computer data logging is the process of recording events, with a computer program usually an application software in a certain scope in order to provide an audit trail that can be used to understand the activity of the system and to diagnose problems.

#### Message

A series of frames constituting a single message.

#### Message ID

Message ID is a text identifier for a VMS message.

#### Pixel

For any given font on any given sign, the smallest switched unit from which active messages are created. It may consist of a single emitter or multiple emitters switched simultaneously.

#### Screen

Any stable state displayed on a variable message sign (VMS) unit that is preceded by and followed by a change of state. It will typically consist of text, symbols, a combination of the two, or a blank display.

#### UTC

Coordinated Universal Time (UTC) is the primary time standard by which the world regulates clocks and time. It is one of several closely related successors to Greenwich Mean Time (GMT). For most purposes, UTC is synonymous with GMT, but GMT is no longer precisely defined by the scientific community.

#### VMS

VMS stands for Variable Message Sign. A sign, including control equipment that can display at least three messages, the transition between messages being caused by electrical means. For the purpose of this definition, an intentionally blank display constitutes a message.

# 1. On Site Preparation

# **1.1.** Sign Positioning

The sign must be positioned on reasonably flat, stable ground in a safe position clear of obstructions, traffic and pedestrians.

- Before removing the trailer from the tow hitch of the tow vehicle, the stabilising legs of the trailer should be deployed to prevent the possibility of the trailer from rolling once unhitched.
- Deploy the stabilising legs from their travelling position (horizontal) to their set up position (vertical) by pulling out the spring loaded leg locking pin, and pivoting the leg 90 degrees until the locking pin re-locks the leg in position.
- Wind the leg down until a firm footing is made with the ground.

#### Note! - All 4 legs MUST be deployed BEFORE raising the mast!

Level the sign by adjusting opposing leg heights. The trailer wheels should be clear of the ground.



# 1.2. Raising the Sign

- To raise the sign, first the spring loaded mast locking pin needs to be released (pulled out).
- Check that the winch handle is secure with both bolts in place and wind the winch handle clockwise to raise the mast.
- Continue winding until the locking pin aligns with the hole in the inner mast and locks the signs into the raised position. (To lower the sign, wind the winch handle in the anti-clockwise direction).
- Lock the locking pin in place with a padlock as a failsafe measure against tampering.



Release the mast locking pin

Check that the **winch handle** is **secure**, with both allen head bolts in place and tight

Use winch to raise sign to full extension



# 1.3. Rotating the Sign

- Once the sign is raised and locked into raised position, the sign can be rotated through 360 degrees to the desired position (facing oncoming traffic).
- As the sign has a disk brake system to prevent the sign from rotating unexpectedly, the break lever must be pulled (away from the mast) while rotating the sign. Once the lever is released, the brake is re-applied.
- To rotate the sign, first release the brake locking device.
- Position the sign to the desired viewing angle while pulling the brake lever and then release.
- Apply the brake locking device as a failsafe for the brake and lock with a pad lock to prevent tampering.



# **1.4 Leaving the Sign Unattended**

Note! - Once raised and rotated into position, and BEFORE leaving the sign unattended, the <u>mast</u> <u>locking pin</u> and <u>brake locking device</u> MUST be securely key locked (pad locked) in position, and the winch handle removed to prevent potential unauthorised tampering with the sign.

As a further fail safe measure, the tow hitch drawbar maybe removed to prevent possible theft and to reduce the trailer footprint in the workspace.

• To remove the drawbar, remove the two drawbar locking pins and slide the drawbar out of the tailer.



To relocate the trailer, complete the above steps in the reverse order.

# 2. Set up for Programming

Before the VMS is able to send or receive text messages (SMS) a valid Sim Card (with credit) needs to be installed in the sign. These are available through your preferred telecommunications provider.

The SIM Card accepted by the VMS is the LARGE or 'normal' type as commonly used in some mobile phones. (Some mobile phones now use Micro or Nano SIM cards - these are the wrong size). The SIM card MUST BE the Normal size, refer opposite.



NB! - BEFORE inserting the SIM card into the sign, The SIM card PIN number MUST BE DISABLED!

The SIM card will by default will be issued with a PIN number by the telecommunications provider. If put into the sign, without disabling the PIN number first, the sign will not work as the pin security interferes with the sign communications. The PIN number must be disabled first.

Note: Never touch the Golden Pins of SIM Card

# 2.1 Disabling the SIM card PIN number

Disabling the SIM card PIN number can be done by inserting the card into any compatible mobile phone (usually an older style phone) and usually going into the phone/SIM card security settings, although all mobile phones are different in this process. Below are some examples to give you a feel for what to do:

#### iPhone

- 1. Insert the SIM card and turn the phone on.
- 2. You will see a message: "SIM card locked". Click on "Unlock".
- 3. Type in the PIN code of the SIM card, click OK.
- 4. Go to Settings, choose "Phone" and then "SIM PIN".
- 5. Set the SIM PIN slider to OFF.

#### Nokia

- 1. Tap Menu
- 2. Tap Settings
- 3. Scroll down to and tap Phone management or Security
- 4. Choose Phone and SIM card
- 5. Tap PIN code request
- 6. Tap Off
- 7. Enter the PIN code, then Tap OK.

#### Samsung Galaxy – (Older Models)

- 1. Press the Menu key
- 2. Tap Settings
- 3. Tap Location and security
- 4. Scroll down to and tap Set up SIM card lock
- 5. Tap Lock SIM card
- 6. Enter the current SIM PIN, then tap OK.

#### **Sony Ericsson**

- 1. Insert the SIM card and turn on your phone.
- 2. Enter the PIN code of the SIM card.
- 3. Choose Menu and go to: Tools/General/Lock
- options/SIM lock/Protection
- 4. Choose OFF. Enter the PIN code of the SIM card once again.

#### Refer to your specific phones instruction manual for further information if needed.

You could also ask your provider to disable the PIN upon purchase at the shop.

Giga Signs VMS 1C Operation Manual - Version 1.1

# 2.2 Inserting the SIM Card

The SIM card needs to be inserted into the core computer of the sign as shown below.

- **1.** To begin, raise the sign around 100mm so it is out of and clear of the support stirrups.
- 2. Release the screen case catches around the 3 sides of the sign case.
- 3. Open the sign screen (this is mounted on gas struts to assist).
- 4. Remove the LED tile in front of the core computer so as to access it.

This is the 3<sup>rd</sup> LED Tile board down in the second row as shown below. To remove the tile board, gently squeeze the tops of the 6 retainers (stand offs). Do NOT remove any wiring.





- 5. Ensure the sign **power is OFF** before inserting the SIM card by removing the fuses at the batteries.
- **6.** Open the SIM card holder by sliding the outer retainer downwards, and open the holder outwards.
- **7.** Insert the SIM card gold side towards the pins and close the outer retainer again.

SIM card holder



- uSD memory card holder
- NB! Never touch the Golden Pins of SIM Card or SIM holder.
- NB! Ensure the power is OFF at the fuse BEFORE inserting SIM card!
- NB! Ensure the SIM card PIN number has been DISABLED BEFORE inserting SIM card.

# **3** Programming

# 3.1 Introduction

This VMS is 48 pixels wide by 28 pixels high, and input may be sent to the sign by 4 different methods:

- PC-based program (VMS Director)
- SMS
- I-Key (Digital key)
- Hand controller (as outlined below)

# **3.2** Hand Controller Operation

When the hand controller plugs into the sign, the below representation screen appears on the controller.



# 3.2.1 Message Creation

You can access pre-set or common messages through the 'PRESET MESSAGE' function OR create your own custom message or sequence of screens through the 'CREATE MESSAGE' function.









# 3.2.2 Run Pre-set or Saved Messages



# 3.2.3 Time & Date Setup



# 3.2.4 General Settings



# 3.2.5 RADAR Setup



### 3.2.6 SMS Passwords Setup



# 3.2.7 Other Features



#### NB!

The touchscreen hand controller (where supplied) is not weatherproof, and must not be permitted to get wet.

Store the controller in the supplied weatherproof container at all times when not in use.

# 3.3 PC-Based Program (VMS Director)

For a detailed description of PC based programming, please refer to the separate "VMS Director" programming manual.



#### **Brief Summery**

# 3.4 i-Key (Digital Key)

Digital Keys allow traffic controllers to cycle through preset messages or turn sign on or off.

To use, press and hold the key into the socket provided.

Upon placing the key, the red LED light above the socket will blink in a rhythm... several short flashes and then a long flash.

After the long flash the sign registers an action.

To turn the sign on, hold the key to the socket for 4 full

cycles of LED flashes. After the 4th long blink, the sign will turn on showing the last displayed message.

To turn the sign off, repeat the same procedure, hold the key for 4 full blink cycles.

To change a message to a different pre-set message, hold the key for 1 cycle of LED flashes and then remove the key. The message will be changed to the next in the cycle.

To see the cycle of pre-set messages, refer to Appendix B at the rear of this manual.

There are 29 pre-set messages, e.g.





# 3.5 SMS Programming

#### Notes:

- If there is no 'Enter' key on your mobile phone, the '\*' can be substituted in its place.
- If your phone cannot send the '@' character, the '%' can be substituted in its place.
- All data is to be followed by an 'Enter' or the '\*' character.
- Commands with no data are to be followed directly by an 'Enter' or the '\*' character.
- In this document the *italic* font indicates any text which is to be typed as part of an SMS.

#### Start of Message (PIN Number)

Each message to the sign must begin with the correct PIN number for the sign followed by 'Enter' or the '\*' character.

XXXX\* The PIN number for the sign followed by '\*' or 'Enter'

Example

1234\* Where the PIN Number is 1234

All Commands are 2 letters followed immediately by any data associated with the command.

Example:

1234*OF*	Turn the sign OFF where the PIN Number is 1234
1234*ON*	Turn the sign ON where the PIN Number is 1234

#### Commands

Command Function	Command Code	
Turn Off (Blank Display)	OF	
Turn On (resume message last displayed)	ON	
Select Message	SM	
Request Status (Query Status)	QQ	
Message Store	MS	
Message Store and Run	MR	

### 3.5.1 Turn Off

To stop the display of messages and to put the sign into a standby mode, send the **OF** command as follows.

**1234**\***OF**\* Where the PIN Number is 1234 The sign can be turned on again by sending a "Message Store and Run", "Select Message" command or **ON** command.

#### 3.5.2 Turn On (Resume)

To tell the sign to display the same message as last selected, send the **ON** command as follows.

1234\*ON\* Where the PIN Number is 1234

#### **3.5.3 Request Status (Query Status)**

To request the sign to send you the current state of its operation, batteries, brightness, location, message ID and message time stamp, send the **QQ** command. As this command has no data, it is immediately followed by 'Enter' or the '\*' character.

1234\*QQ\* Where the PIN Number is 1234

#### 3.5.4 Select Message

To select a message to show on the screen you need to send **SMxx.** The xx represents by the 2 digit message number you wish to select. The preset messages are numbers 01 to 29 as shown in the Appendix in the end of this manual. User Messages are numbers 30 to 48 and the SMS messages are numbers 49 to 53.

Example:

1234\*SM28\* Selects Message 28 where the PIN Number is 1234

**1234\*SM30\*** Selects Message 30 which is User message number U01 where the PIN Number is 1234

### 3.5.5 Message Store

The Message Store command data must be input exactly in the format described below.

The Command **MS** followed by the SMS message number is used to store as one digit (1-5).

The first line after the **MSx** command is the ID for the message. This name is limited to 8 characters.

The following lines are now part of the message. The sign will allow 4 lines per screen with a maximum of 10 characters per line. To end a screen before the lines are all filled leave a blank line and the sign will move onto the next screen. The blank line will not be a part of the message. To leave a blank line in the message put a 'Space' character on the line.

WHERE THE PIN NUMBER OF SIGN IS 1234
COMMAND TO RUN THE MESSAGE
MESSAGE NAME (NOT SHOWN ON SCREEN)
LINE 1 OF SCREEN 1
LINE 2 OF SCREEN 1
LINE 3 OF SCREEN 1 (BLANK, END OF SCREEN)
LINE 1 OF SCREEN 2
LINE 2 OF SCREEN 2
LINE 2 OF SCREEN 3
END OF MESSAGE

Here's the same message using the '\*' instead of the 'Enter'.

#### 1234\*MS1\*TEST\*SLOW\*DOWN\*\*ROAD\*WORK\*AHEAD@@\*

NB: There must be an 'Enter' or '\*' after the final '@@'.

#### **3.5.6 Displaying Graphics**

Graphics can be displayed by entering **@Gxx** on the first line of a screen and the sign will display the relevant Graphic number as represented by the xx. To end the message put '@@' as the first characters after an 'Enter' or the '\*' character. Preset Graphic codes in Appendix at the end of this manual.

### 3.5.7 Displaying RADAR

The RADAR mode 1 can be displayed by entering **@R1** or inserting the RADAR Speed placeholder '###' inside message. Also the RADAR mode 2 can be displayed by entering **@R2**.

Example:

1234\*MR2\*TEST\*@R1@@\*

Where the PIN Number is 1234

### 3.5.8 Display/Blank Times

To set the display time place an **@Dxx** as the first characters after an 'Enter' or the '\*' character where the xx is a two digit number representing tenths of a second. To set the off time between displays place an **@Bxx** as the first characters after an 'Enter' or the '\*' character where the xx is a two digit number representing tenths of a second. There are a maximum of 5 screens allowed per message, however the limit for an SMS message is 160 characters and this must not be exceeded.

Example:

1234\*MR1\*TEST\*@D15@B05@G01\*@@\*

Where the PIN Number is 1234. The sign displays the below graphic for 15 tenth of a second and blanks for 5 tenth of second.



### 3.5.9 Message Justification

The message can be justified to the center by entering **@JC**, to the left by entering **@JL** and to the right by entering **@JR**.

#### 1234\*MR1\*TEST\*SLOW\*DOWN\*\*ROAD\*WORK\*AHEAD\*@JL\*@G02\*@@\*

Where the PIN Number is 1234. The sign displays the below screens.



### 3.5.10 Message Store and Run

This command is identical to the Message Store command (except **MRx** replaces **MSx** in the command) with the exception that the newly stored message is run immediately.

#### 3.5.11 Demo Messages

Here is an example of a message with 2 text screens and a graphic.

1234	PIN NUMBER OF SIGN
MR1	COMMAND TO RUN THE MESSAGE
TEST	MESSAGE NAME (NOT SHOWN ON SCREEN)
SLOW	LINE 1 OF SCREEN 1
DOWN	LINE 2 OF SCREEN 1
[Enter]	LINE 3 OF SCREEN 1 (BLANK, END OF SCREEN)
ROAD	LINE 1 OF SCREEN 2
WORK	LINE 2 OF SCREEN 2
AHEAD	LINE 2 OF SCREEN 3
@G01	SCREEN 3 IS GRAPHIC 01
@@	END OF MESSAGE

Here's the same message using the '\*' instead of the 'Enter'.

#### 1234\*MR1\*TEST\*SLOW\*DOWN\*\*ROAD\*WORK\*AHEAD\*@G01\*@@\*

Where the PIN Number is 1234. The sign displays the opposite screens.



#### 3.5.12 Character Translations to Symbols

Due to differences in some phones, and the fact that most phones do not have symbols for lanes and arrows, we need to convert some characters to be able to configure the VMS correctly. Below is a table of character conversions you need in order to configure the VMS correctly.

Character Translations to Symbols

Character SMS SYMBOL DISPLAYED SYMBOL

40	(	?
41	)	@
58	:	<b></b>
59		
60	<	-
61	=	-
62	>	—
63	?	Т

### **Appendix A. SMS Graphics**

@G00	<b>*~</b>	@G13	<b>T</b> ↑
@G01	20	@G14	<u>†</u> TT
@G02	30	@G15	ĪĪ
@G03	40	@G16	<b>111</b>
@G04	50	@G17	<u>ī</u> ††
@G05	60	@G18	<u>††††</u>
@G06	70	@G19	<b>TTT</b> †
@G07	(80)	@G20	<b>1111</b>
@G08	90	@G21	<b>TT</b> ††
@G09	100	@G22	<b>111</b>
@G10	110	@G23	<b>T</b> †††
@G11	7	@G24	←
@G12	<b>† T</b>	@G25	$\rightarrow$

# Appendix A. SMS Graphics (CONTINUED)

@G26	SLOW DOWN	@G39	111
@G27	TTT	@G40	<b>1</b> ī1
@G28	TTTT	@G41	REDUCE SPEED SPEED LIMIT 40km/h
@G29	TTT	@G42	REDUCE SPEED SPEED LIMIT 50km/h
@G30	TTTT	@G43	REDUCE SPEED SPEED LIMIT 60km/h
@G31	<u>\$</u> \$	@G44	REDUCE SPEED SPEED LIMIT 70km/h
@G32	- 77	@G45	REDUCE SPEED SPEED LIMIT 80km/h
@G33	U	@G46	REDUCE SPEED SPEED LIMIT 90km/h
@G34	- 11	@G47	REDUCE SPEED SPEED LIMIT 100 km/h
@G35	- 72	@G48	REDUCE SPEED SPEED LIMIT 110km/h
@G36		@G49	ነኦ
@G37		@G50	ንፑ
@G38	CHANGED TRAFFIC CONDITIONS AHEAD	@G51	<u>1111</u>



@G57

# Appendix A. SMS & Hand Controller Graphics (CONTINUED)

### **Appendix B. Pre-set Messages**

@G54

ΤΙ

P01	WRK TT
P02	WRK T↑
P03	WRK <b>↑</b> TT
P04	WRK TT↑
P05	WRK 11T
P06	WRK T↑↑
P07	WRK <b>↑</b> TTT
P08	WRK TTT↑
P09	WRK 11T
P10	WRK TT↑↑
P11	WRK ↑↑↑Τ
P12	WRK T↑↑↑
P13	FLAGMAN
P14	LEFT ARR



### Appendix B. Pre-set Messages (CONTINUED)

P15	RGHT	ARR
P15	RGHT	ARR

- P16 CTN RDWK
- P17 PREPSTOP
- P18 EXPDELAY
- P19 PTSEXDEL
- P20 CHNGTRAH
- P21 DTRAH RS
- P22 TRAF HZD
- P23 EXITCLSD
- P24 ROADCLSD
- P25 WRK ↑T↑
- FZJ WINK I I I
- P26 WRK ↑TT↑
- P27 WRK ↑T↑↑
- P28 WRK ↑↑T↑
- P29 RDWKRAMP

$\rightarrow$	
CAUTION	ROAD WORK AHEAD
PREPARE TO STOP	
expect Delays	
PREPARE TO STOP	expect Delays
CHANGED TRAFFIC AHEAD	
detour Ahead	REDUCE SPEED
TRAFFIC HAZARD AHEAD	
EXIT CLOSED	
road Closed	
111	×.
<b>1TT</b> 1	×.
1111	1 m
1111	1
ROAD WORK ON RAMP	1 and a

#### DOCUMENT REVISION HISTORY:

Date	Document Version	Document Revision History	Document Author/Revisor
11/11/2013	1.0	Document created from Draft	J. A.
28/11/2013	1.1	Included chapter on SIM Card Formatting and Install	D. E.