



## DisplayMark Controller

### Overview

The Digital View DisplayMark controller provides independent validation that a monitor is currently displaying the requested video. Utilizing a combination of pattern recognition combined with signal validation, the DisplayMark controller provides positive confirmation on a timed or interrogation basis.

The DisplayMark controller works only as an add-on to the Digital View SVH-1920 display controller with custom firmware installed.

### General Functionality

The Display Mark integrates three conditions to ensure that the display is fully functional:

- The sync validation circuit confirms that an inbound video signal (i.e. ARGB, DVI, NTSC, etc) is being received and that the format is recognized by the Display Mark board.
- The backlight enable signal, which indicates that the SVH-1920 controller can decode the video signal and is attempting to display the picture.
- The output of the DisplayMark controller that verifies the picture is being displayed and is being updated.

The controller combines these three conditions into a simple 1/0 good/bad status that may be read by the host system through interrogation commands.

### Battery Backup (Option)

The controller contains a battery that is recharged by the normal operation of the product. Once installed, the controller may be configured to output a unique alarm message on the serial port to indicate that the power to the unit has failed. A further command may be sent once the power is restored.

### Shock Detection (Option)

The controller supports an optional accelerometer that functions as shock detector to register and report the occurrence of high impacts and shock to the enclosure. The accelerometer is set to a nominal level that will be triggered by motions in excess of 3G. When installed the shock byte in the protocol will be set to a "1" when no shock has occurred and to a "0" if a shock has occurred. Once a shock event occurs, the status will remain set until the controller has been interrogated after which it is automatically reset.

If the accelerometer option is not installed the shock byte will return a "-" (2Dh)

### Temperature Monitor (Option)

The controller supports an optional temperature sensor that will report back the temperature at the sensor with a  $\pm 2^\circ$  accuracy. With the option installed the controller will respond to a temperature enquiry with a three digit response indicating the temperature in Fahrenheit,

### Communications Protocol

The DisplayMark controller utilises extensions to the Digital View serial protocol. Operating at 2400 Baud, 8 bits, no parity, the protocol can be used to command or interrogate. Such protocols could be programs like (Access Port, Comport Tool Kit, RealTerm, etc.)

Note: There is a delay of 90 seconds every time the unit is powered on as well as when you query a command.

Display Mark Sensor	[STX] 0x02	Start of Text	Lead in Character
	[ID]	3 Byte Address (ASCII)	Address Range of "000 to 146". "000" will be treated as a broadcast address.
	[0xE4][0x44]	DisplayMark Sensor function	DisplayMark Sensor
	"01" "02"	Status bytes	Byte #1 = DisplayMark Status Byte #2 = Accelerometer Status
	[0x30] [0x31]	Device Number	Reserved for expansion
	[?] 0x3F	Query	Request status
	<p>Examples:</p> <p><u>Query</u> 02 30 30 32 E4 44 30 31 3F</p> <p><u>Response</u> 02 30 30 32 E4 44 30 31 3F x1 x2 CR</p>		<p>Status query to DisplayMark sensor</p> <p>Response from Sensor at ID#002, where x1, x2, x3 are status bytes defined as:</p> <p>x1 = 0x31 - LED/Inverter status OK x1 = 0x30 -LED/Inverter status Fail x2 = 0x31 - DisplayMark OK x2 = 0x30 - Display Mark fail x3 = 0x31 - Accelerometer OK x3 = 0x30 - Accelerometer fail</p>

Temperature Sensor	[STX] 0x02	Start of Text	Lead in Character
	[ID]	3 Byte Address (ASCII)	Address Range of "000 to 146". "000" will be treated as a broadcast address.
	[0xE4][0x41]	Temperature sensor function	Temperature value in 3 digits in Celsius
	[0x30] [0x31]	Device Number	Reserved for expansion
	[?] 0x3F	Query	Request status
	<p>Example:</p> <p><u>Query</u> 02 30 30 31 E4 41 30 31 3F</p> <p><u>Response</u></p>		<p>Temperature query</p> <p>Query</p> <p>Response</p>

	<u>02 30 30 31 E4 41 30 31 3F x1 x2 x3</u>	Where x1, x2, x3 are three digits representing the temperature in Celsius
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## Installation & Calibration

The controller is delivered with cables to plug into CN8 (serial port) internal header of the SVH-1920. Separate wires in the harness must be attached to the green LED signal (LED 1 connector pin #3) and the Inverter Enable signal (CNB1 pin #3).

In order for the DisplayMark controller to function, the SVH-1920 must be programmed with firmware version E0.043 Demo 4. Once this installation is complete to this level, then the unit may be powered on. With a valid video input connected, an alternating black and white block will be seen in the lower right hand corner of the screen. The photo sensor must be position on the screen surface over this block.

With switch #8 set to the Off position the controller will initialize with a copyright message and then halt for about 30 seconds. It will then start to report LX and LXb readings which indicate the high and low values being read by the sensor i.e LXb35 LX 190. The values will vary according to the brightness of the LCD panel. The objective is to use the onboard potentiometer to adjust the gain in the circuit such that the LXb level is at 30 or below to ensure consistent operation over a wide range of temperature and ambient conditions.

## Switch Configuration

The controller has a bank of 8 switches

Switches 1-7 are used to set the address of the device. Where multiple devices are installed in a common environment the setting unique addresses is mandatory.

The address switches are set to On for "0" and to Off for a "1"

Address 003 would be switches "1" and "2 " set to Off.

Switch #8 is to enable the controller to send out the Lx values. When set to Off, it sends out the calibration values out of both ports and when set to On, it disables this information being sent via the primary serial port.

## Ordering Information

KIT 70300-3            Basic controller, sensor & cables kit

KIT 70301-3 Basic controller kit, with accelerometer

KIT 70302-3 Basic controller kit , with accelerometer & temperature sensor

KIT 70303-3 Basic controller kit , with temperature sensor