

Application Note —

SXGA-R2-H1 Reflective Microdisplay and Interface Electronics

Entry Level Viewer

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1 Introduction

The SXGA-R2 is a complete reflective microdisplay product consisting of one or two microdisplay modules and interface electronics, depending on product configuration. The *SXGA-R2 User Guide* (document number 5043-60001) instructs you how to get the best from the Reflective Microdisplay product. This document should be read in conjunction with the User Guide.

1.1 Purpose

This document provides details for users wishing to use the Entry Level Viewer (ELV) with their SXGA-R2 product. It is not a guide to optimised optical construction, but covers basic aspects of the optical design required to view an image on the SXGA Microdisplay whilst using LED illumination.
This document covers only the LED-illuminated applications of the SXGA-R2 Reflective Microdisplay product. Information contained in here may not be suitable for other applications. It is CRL Opto policy to continually develop this product. The information contained in this document may change without notice.

1.2 Location of LED Connectors

At the time of writing, there are two connectors that can be used to connect LED modules to the interface electronics. These can be found on the under side of the ASIC Driver Board (M43) and on the LVDS Receiver Board (M48) when the LVDS link is employed. However, only the LED connection on the LVDS Receiver board (M48) can be used with the ELV.

1.3 Precautions and Warnings

The user should observe all of the precautions and warnings given in *SXGA-R2 User Guide*. In addition, there are some precautions and warnings specific to the use of the LED connectors, and these are given below.

1.3.1 Electro-static discharge



The connector incorporates no protection against electro-static discharge (ESD). It is recommended that normal static precautions are observed at all times when working with this connector.

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2 The Entry Level Viewer

The quickest way to see the displayed image is to use the ELV (illustrated in figure 2.1) supplied by CRL Opto. The viewer assembly contains an RGB LED illuminator, polariser and optics that are required to view the microdisplay.

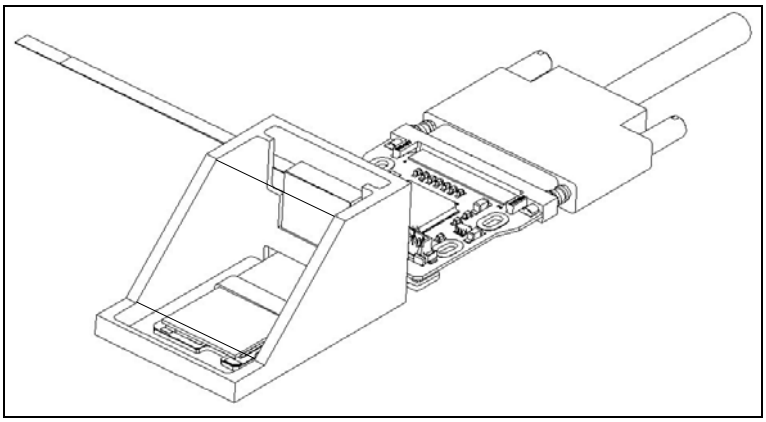


Figure 2. 1: Entry Level Viewer with M48 and M49

The viewer is directly compatible with the M48 board and connection to that board is explained in Section 3.

The ELV utilises a very simple optical design as illustrated in figure 2.2. Light from the LED illuminator array is directed onto the display. The illuminating light has to be linearly polarized before it hits the display. This can be done purely using the polarising beam splitter (PBS), but a pre-polarizer is also used to improve the contrast ratio. The light reflected from the display is analysed by the PBS.

The user views the display through the supplied lens, which acts as a simple magnifier. The lens supplied is a very basic magnifying lens and as such is not suitable for obtaining a very high quality image of the display. However, the lens will allow the user to check that the correct image is displayed, which is the purpose of the ELV.

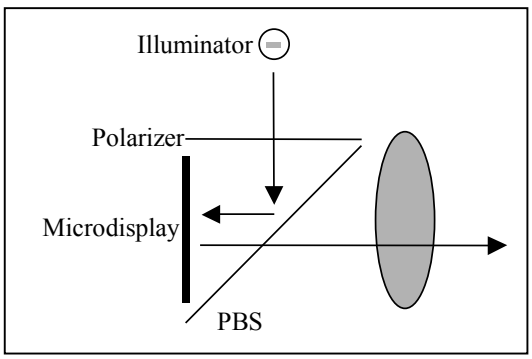


Figure 2.2: ELV optical layout

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3 The LED Connector: M48 LVDS Receiver Board

3.1 Location

The LED connector on the M48 LVDS Receiver Board is located as shown in Figure 3.1 and is identified as J2 on the PCB silkscreen. It is intended that this connector be used to drive a Teledyne Alphalight AL0505C LED array, which is supplied as part of the ELV.

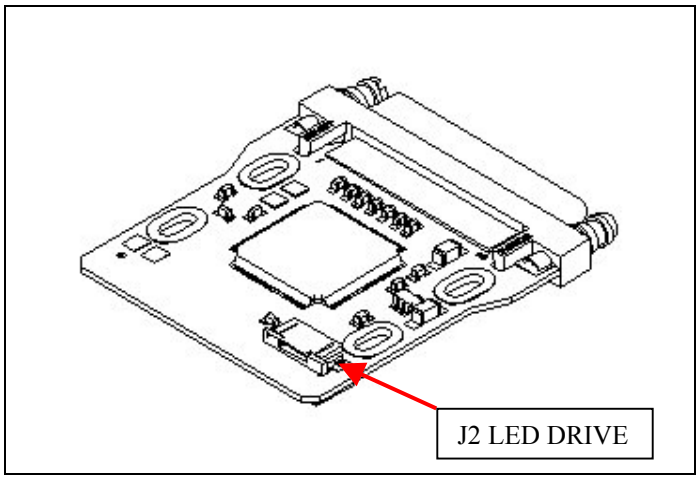


Figure 3.1: Location of LED Connector on the M48

3.1.1 Pinout

The LED connector is a 7-pin ZIF, top contact style socket for connection to the flat flexible circuit on the Teledyne LED array, as shown in Figure 3.2. The pin signals are listed in Table 3.1.

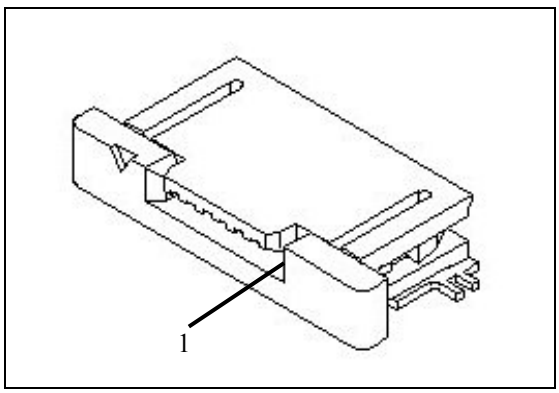


Figure 3.2: Pinout

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Pin	Name	Description
1	Green_1	Cathode of Green LED
2	Red_1	Cathode of Red LED
3	Blue_1	Cathode of Blue LED
4	Green_2	Cathode of Green LED
5	Red_2	Cathode of Red LED
6	Blue_2	Cathode of Blue LED
7	Common	Common Anode

Table 1: Zif Connector Pin Functions

4 Using the Entry Level Viewer

In order to use the ELV, the flexi-tape from the Teledyne LED array should be connected to the ZIF connector on the M48 (shown in section 3.1). The flexi-tape should be inserted with the contacts facing up. The ELV should then be placed over the display such that the centre of the display is aligned with the centre of the PBS, as illustrated in figure 4.1. The procedure for getting an image on the display and controlling the LEDs is documented in *SXGA-R2 User Guide*.

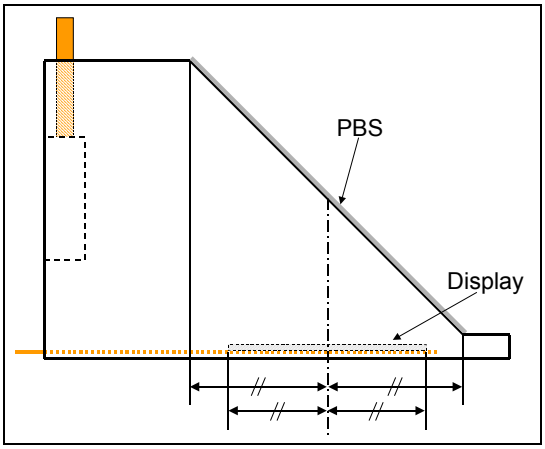


Figure 4.1: Location of display in relation to the ELV

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5 Contacting CRL Opto

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