

picoLink Series

SDM-875p

Guide to Installation
and Operation

M640-9900-101

HDTV Serial
Digital to
Component
VGA/DVI
Converter

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SDM-875p

Radio Frequency Interference and Immunity

This unit generates, uses, and can radiate radio frequency energy. If the unit is not properly installed and used in accordance with this guide, it may cause interference with radio communications. Operation with non-certified peripheral devices is likely to result in interference with radio and television reception. This equipment has been tested and complies with the limits in accordance with the specifications in:

- FCC Part 15, Subpart B
 - CE EN50081-1:1992
 - CE EN50082-1:1992.
-

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1.0 SDM-875p HDTV Serial Digital to Component VGA/DVI Converter

1.1 Introduction

The SDM-875p is a High Definition digital converter converting serial digital HDTV (SMPTE 292M) to High Definition Component Analog/Digital (Y/Pb/Pr and RGB). The SDM-875p provides automatic input scan rate detection and supports a wide variety of input formats including 525i, 625i, 720p, 1080i and 1080p. Output formats are compliant to EIA/CEA-861-B standard. The primary application is to convert HD serial to Component Analog/Digital for the purposes of feeding an HDTV monitor, computer monitor and projector. (CRT, LCD, Plasma, DLP, D-ILA etc). In order to support the emerging popularity of 24p equipment and digital display, the SDM-875p provides VGA and DVI output with selectable 3:2 sequence insertion.

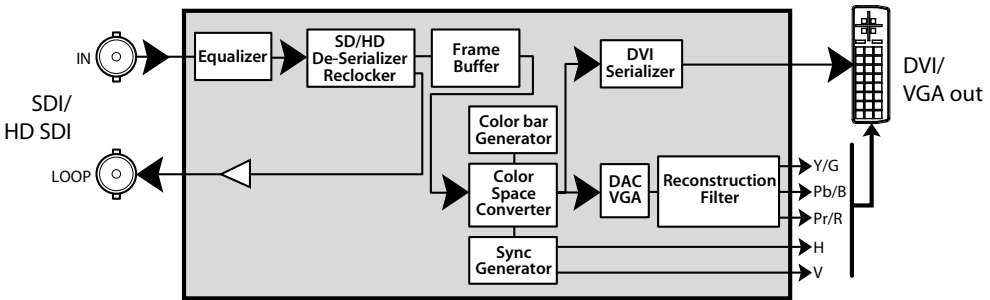


Figure 1 SDM-875p functional block diagram

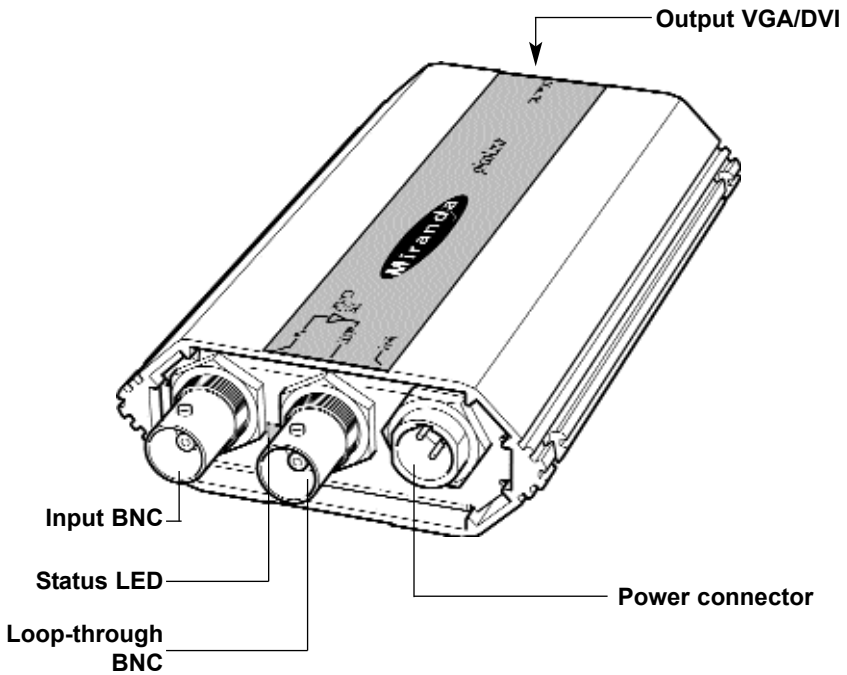
1.2 Features

- SDI and HD SDI video input with active loop-through
- HD component analog and digital output, Y/Pb/Pr or RGB. Digital RGB output compliant to DVI 1.0
- Composite Sync on all Components (Bi-Level or Tri-Level) or Separate H and V sync out (TTL-Level)
- Supports 525i, 625i, 720p, 1080p, 1080i with automatic input scan rate detection
- Supports direct output, p to PsF, PsF to p, 3:2 insert, Panasonic Varicam
- Built-in test signal and 4:3 markers
- Compact stand-alone package

2.0 Overall View

Figure 2 illustrates the SDM-875p's major parts and their locations. A high-definition or standard definition digital video source is connected to the HD/SD SDI IN BNC and the Component Analog/Digital output is provided by the DVI-I connector. Error status is provided by the status LED. Finally, the power source is connected to the lockable power connector.

Figure 2 Overall view of the SDM-875p



3.0 Installation

3.1 Power Supply

The power supplies LKS-WSU, for 110 V and 220 V operation, is used to power the SDM-875p. The power supply provides a regulated +5 VDC@2.4 A power source. The SDM-875p employs a mini XLR-3 connector for its power needs. Figure 3 provides a detailed pinout of the male connector.

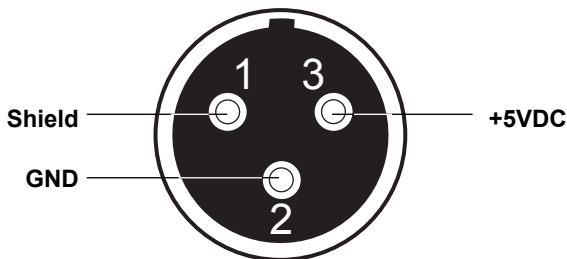


Figure 3 Power connector pinout

3.2 HD/SD Serial Digital Video Input with Active Loop-Through

Connect a high-definition or standard definition digital video signal to the BNC labeled HD-SDI IN. The high-definition serial digital input signal must conform to the SMPTE 292M standard. The standard definition serial digital input signal must conform to the SMPTE 259M-C standard.

Make sure that the input signal cable has a maximum length of 75m (250') and that all serial digital video equipment are connected point-to-point. For instance, there must be a point-to-point connection between the HD/SD SDI IN BNC and the source equipment. If a T-connector is used to connect other equipment, the maximum specified cable length is no longer valid.

3.3 High Definition Component Analog/Digital Video Output

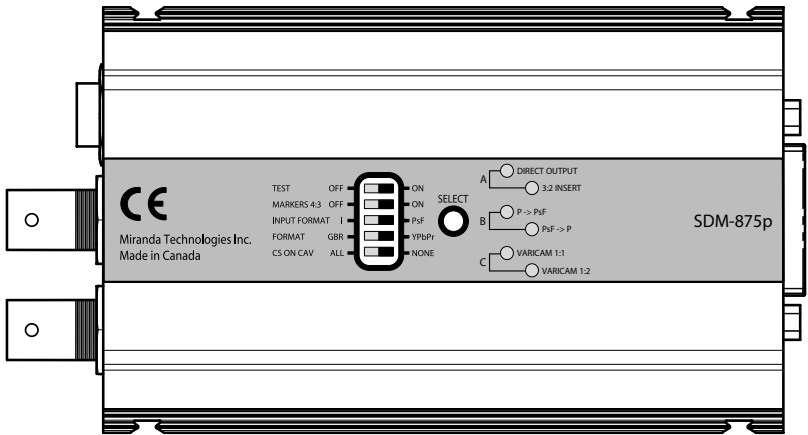
The high definition component analog/digital video output signal (Y/Pb/Pr and RGB) is provided by the DVI-I (female) labeled OUTPUT. A DVI-to-VGA adapter is supplied for analog output. The output format is automatically selected according to the input signal; for a complete list of the output formats and related SMPTE standards refer to section **5 Specifications**.

4.0 Operation

4.1 Switch Settings

Figure 4.1 outlines the slide switches and pushbutton selection.

Figure 4.1 SDM-875p Underside



Slide Switches selection:

Test Pattern Selection

On: Set the "Test" slide switch to this position to enable the test pattern on output. The test pattern consists of a HDTV color bars.

Off: The test pattern is disabled.

Note: in order to output a test pattern, a valid input signal must be installed.

Markers 4:3 Selection:

- On: Set the “Markers 4:3” slide switch to this position to display 4:3 markers on the 16:9 image.
- Off: The 4:3 markers are disabled.

Input format

- I: Set the “Input Format” slide switch to this position for most input signal.
- Psf: Set the “Input Format” slide switch to this position to access additional output format when input format is 1920x1080 25PsF.

Output format

- GBR: For GBR CAV output, set the slide switch to this position.
- YPbPr: For Y/Pb/Pr CAV output, set the slide switch to this position.

CS (Composite Sync) on CAV

- All: Set the slide switch to this position to add sync to the color components of the signal. Composite sync is bi-level for GBR output and tri-level for YPbPr output.
- None: Set the slide switch to this position to output separate H and V sync.

Pushbutton Selection

The “Select” pushbutton allows the selection of different processing modes, according to the input format. When the pushbutton is depressed once, the LED indicating the currently selected processing mode flashes red and green; when depressed again, the alternate option LED flashes in its turn if it is available. Confirm the selection by depressing the pushbutton again. Other processing modes are accessed by depressing the pushbutton consecutively until the desired mode is reached. For processing mode *A*, *B* and *C*, both LEDs need to be turned on. See the supported format table in section **5 Specification** for details on resulting outputs.

Mode A: use this mode to output 25PsF signal from a 24p or 24PsF input signal.

Direct output:

use this selection to output a signal with the same format as the input signal.

3:2 Insert: inserts a 3:2 sequence to output a 59.94i and 60i signal.

Mode B: reserved for future use

P→PsF: use this selection to output an interlaced signal from a progressive input signal.

PsF→P: use this selection to output a progressive signal from an interlaced input signal.

Mode C: reserved for future use

Varicam 1:1:

use this setting to output a 24p, 25p or 30p signal from a 60p or 59.94p signal originating from a Panasonic varicam system.

Varicam 1:2:

use this setting to output a 50p signal from a 60p signal originating from a Panasonic varicam system.

4.2 Status LED

The multicolored status LED, located between the HD/SD SDI IN and LOOP BNC connectors, is provided to identify any input errors and the selection of the test pattern. The following lists all possible situations.

- Green:** Indicates that the SDM-875p is powered and has detected a valid input signal.
- Red:** Indicates an invalid input signal or simply, there is no input signal installed.
- Orange:** The test pattern is selected.

5.0 Specifications

Input

Signal:	SMPTE 292M (1.485, 1.485/1.001 Gbps) with re-clocked loop-through output
Cable length:	75 m (250') (Belden 1694A)
Return loss:	>15 dB up to 1.5 GHz
Connector:	75Ω BNC

Output

Signal:	Analog user-selectable Y/Pb/Pr or GBR Digital fixed GBR (DVI)
Connector:	DVI-I, Female, compliant to DVI 1.0 pin out
Digital format:	DVI output format are compliant to EIA/CEA-861-B except for: 1920x1080/24,23.98/PsF
Analog Format:	Auto select based on input signal See <i>Supported Format Table</i>
Sync out (user-selectable):	Bi-Level or Tri-Level CS on all components; CS on all components or none (H/V activated)
H/V Level:	TTL Level

General specification

Quantization:	10 bits
Processing delay:	see <i>Supported Format Table</i>
Power voltage:	5VDC
Consumption:	5.5 W

SDM-875p

Supported Format

Input format	Standard	Mode	VGA & DVI output format	Standard	Delay
525	SMPTE-125M SMPTE-267M	Dir.Output	720x486 59.94i	SMPTE-125M SMPTE-267M	< 5us
625	EBU	Dir.Output	720x576 50i	EBU	< 5us
1280x720 60p	SMPTE-296M	Dir.Output Varicam 1:1 Varicam 1:1 Varicam 1:1 Varicam 1:1 Varicam 1:2	1280x720 60p 1280x720 24p 1280x720 25p 1280x720 30p 1280x720 50p 1280x720 50p	SMPTE-296M SMPTE-296M SMPTE-296M SMPTE-296M SMPTE-296M SMPTE-296M	< 5us 1 Fr. 1 Fr. 1 Fr. 1 Fr. 1 Fr.
1280x720 59.94p	SMPTE-296M	Dir.Output Varicam 1:1 Varicam 1:1 Varicam 1:1 Varicam 1:2	1280x720 59.94p 1280x720 23.98p 1280x720 29.97p 1280x720 49.95p 1280x720 49.95p	SMPTE-296M SMPTE-296M SMPTE-296M SMPTE-296M SMPTE-296M	< 5us 1 Fr. 1 Fr. 1 Fr. 1 Fr.
1280x720 50p	SMPTE-296M	Dir.Output	1280x720 50p	SMPTE-296M	< 5us
1920x1080 60i	SMPTE-274M	Dir.Output	1920x1080 60i	SMPTE-274M	< 5us
1920x1080 59.94i	SMPTE-274M	Dir.Output	1920x1080 59.94i	SMPTE-274M	< 5us
1920x1080 50i	SMPTE-274M	Dir.Output	1920x1080 50i	SMPTE-274M	< 5us
1920x1080 25 PsF	SMPTE-274M	Dir.Output PsF→P	1920x1080 25 PsF* 1920x1080 25p*	SMPTE-274M SMPTE-274M	< 5us 1 Fr.
1920x1080 24 PsF	SMPTE-274M	Dir.Output PsF→P 3:2 Insert A	1920x1080 24 PsF 1920x1080 24p 1920x1080 60i 1920x1080 25 PsF*	SMPTE-274M SMPTE-274M SMPTE-274M SMPTE-274M	< 5us 1 Fr. 1 Fr. 1 Fr.
1920x1080 23.98PsF	SMPTE-274M	Dir.Output PsF→P 3:2 Insert A	1920x1080 23.98 PsF 1920x1080 23.98p 1920x1080 59.94i 1920x1080 24.97 PsF	SMPTE-274M SMPTE-274M SMPTE-274M	< 5us 1 Fr. 1 Fr. 1 Fr.
1920x1080 25p	SMPTE-274M	Dir.Output P→PsF	1920x1080 25p* 1920x1080 25 PsF*	SMPTE-274M SMPTE-274M	< 5us 1 Fr.

1920x1080 24p	SMPTE-274M	Dir.Output	1920x1080 24p	SMPTE-274M	< 5us
		P→PsF	1920x1080 24 PsF	SMPTE-274M	1 Fr.
		3:2 Insert	1920x1080 60i	SMPTE-274M	1 Fr.
		A	1920x1080 25 PsF*	SMPTE-274M	1 Fr.
1920x1080 23.98p	SMPTE-274M	Dir. Output	1920x1080 23.98p	SMPTE-274M	< 5us
		P→PsF	1920x1080 23.98 PsF	SMPTE-274M	1 Fr.
		3:2 Insert	1920x1080 59.94i	SMPTE-274M	1 Fr.

* Not yet tested

Analog Luminance (Y) Performance

Frequency response: ± 0.25 dB up to 30 MHz

Analog Chrominance (Pb, Pr) Performance

Frequency response: ± 0.4 dB up to 15 MHz

Y, Pb, Pr

Group delay: <6.7 ns up to 30 MHz

Noise ratio: 58 dB up to 30 MHz

Return loss: >20 dB up to 30 MHz