

# LMLTW44 Installation and User Manual

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## 1 General Description

The LMLTW44 board is a multi-channel PCI board based on the TW6805 chip. These are the general LMLTW44 board's features:

- Video digitized using YUV 4:2:2 color format: NTSC 640x480 60 fps, PAL 758x576 50 fps
- 4 full rate or 8 multiplexed composite video inputs

**LMLTW44 video capture function is fully supported in all current shipping Linux kernel (version 2.6 and above). LML provides git, RPM and DEB repositories for LMLTW44 kernel drivers easy install. Work in underway on driver promotion to the mainstream kernel.**

## 2 Notational Conventions

Your input is designated with \$, for the command shell input prompt, and with # for superuser mode input. Your input and system response are presented in **bold face**. Filenames and URLs are underlined. System commands (line uname -r) are using San Serif font.

## 3 System Requirements

- Any modern Linux distribution based on 2.6 series kernels
- CPU PIII 866MHz or better
- RAM 64M or more
- EIDE, SATA disk drives
- Any Video Display card compatible, Xv or OpenGL support for optimum performance recommended

## 4 Physical Installation

Open computer case. Install LMLTW44 card into available PCI slot. Attach octopus DB to 8 BNC cable. BNC inputs are numbered 1 to 8. Primary inputs (V4L2 composite input 1) are inputs 1 to 4. Secondary inputs (V4L2 composite input 2) are inputs 5 to 8.

To capture video from 4 cameras at full (25/30) frame rate, connect them to inputs 1 through 4.

## 5 Video4Linux Driver LMLTW44 overview

You may load the bttv driver after each reboot manually, or modify the /etc/modules to let this happen automatically.

You may need to restart X11 after inserting the driver to prevent V4L X11 module from using cached video card settings that prevent the use of LML patches provided features.

### 5.1 Manually Loading Driver Module

To manually load the driver:

```
$ sudo /sbin/modprobe tw68
```

### 5.2 Configuring the System to Load Driver Module Automatically

In order to load bttv.o module automatically you need to do the following:

Append the following line to file /etc/modules for LMLTW44:

```
tw68
```

run depmod to update system configuration:

```
# depmod -a
```

now, you should be able to autoloading the driver when a program requests it.

## 6 Video monitoring Application (xawtv)

Xawtv software allows you to test LMLTW44 card operation at rather low level.

### 6.1 Building

### 6.2 Installation

Under Ubuntu:

```
sudo apt-get install xawtv
```

Under Fedora:

```
sudo yum install xawtv
```

### 6.3 Configuration file

You should create configuration presets and defaults for xawtv, by the way of editing `~/xawtv` file. This file is not created automatically during the installation process. You will need to create it in the home directory of the user(s) that will be using the application.

This is an example of the `~/xawtv` file (for EU, PAL):

```
# this is a comment
[global]
[Camera1]
norm = PAL
input = Composite0
key = 1
[Camera2]
norm = PAL
input = Composite1
key = 2
```

For the US replace PAL with NTSC.

### 6.4 Running xawtv application

LMLTW44 has 4 independent video capture engines, that are represented as 4 separate devices:

`/dev/video0`

`/dev/video1`

`/dev/video2`

`/dev/video3`

in order to connect to a certain device use this command line xawtv invocation (this is 2nd input, counting from card top):

```
xawtv -c /dev/video1
```

this brings the video application windows, right clicking on it brings configuration menu, left clicking allows to select video input (such as Camera1 or Camera2 for the configuration in section 6.3 above). In order to use different capture device you need to restart xawtv with different -c option (i.e. **xawtv -c /dev/video0**)

## 7 ZoneMinder Video Surveillance software

ZoneMinder comes as a standard package in recent Ubuntu and Fedora distributions. When LMLTW44 is installed and driver configured you need to use `/dev/video0(0)` through `/dev/video3(0)` as ZoneMinder 'local' type sources.