

# Gphoto on OpenWRT

Panoramic photography on  
linuxbased embedded devices



Provided by Cityscope Berlin

# Overview

- Introduction of Gphoto
- Remote capture supported cameras
- How to install Gphoto on a OpenWRT device
- How to use Gphoto
- Things to know about Gphoto on OpenWRT
- generating a panoramic image
- Examples and pictures

# Introduction of Gphoto

Gphoto project page on [gphoto.org](http://gphoto.org)

Software is open source based on LGPL

It supports more than 1000 cameras

It runs on linux, BSD, Mac and OpenWRT

Gphoto library and Gphoto tools Version 2.4.7

First goal was to transfer files from the cameras

But some cameras support remote capture

# Introduction of Gphoto

PTP (Picture Transfer Protocol)

Using USB port (older cameras use serial port)

Compiling and installing

first libgphoto (./configure make sudo make install)

then gphoto tools (./configure make sudo make install)

Thanks to Marcus Meissner from Suse

# Remote capture

Only some cameras support remote capture

Best Cameras to use is Canon PowerShot G-Series  
some models from A-Series and SX110

List of supported cameras is provided from Canon  
Canon Digital Camera Software Developers Kit

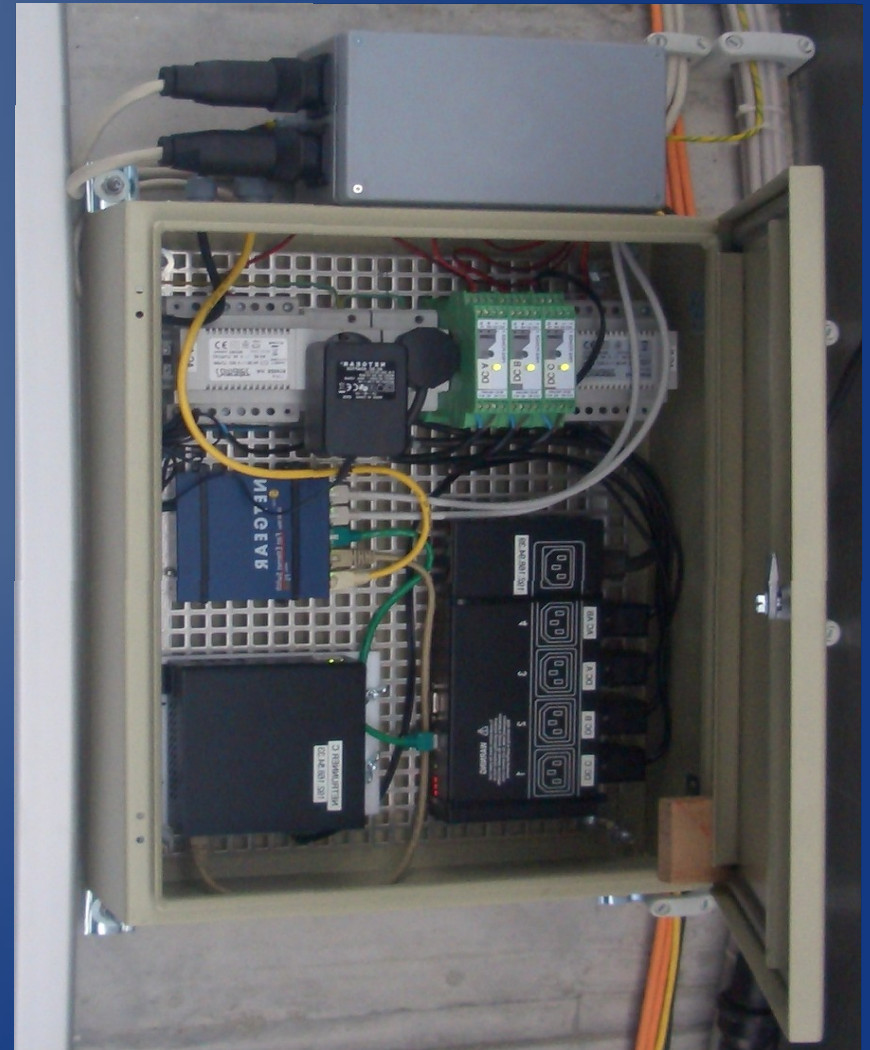
Reverse engineering of PTP Library (USB Sniffing)

Some Nikon Cameras and old Kodak cams work as well



# Gphoto on OpenWRT

- Mips and X86 Hardware
  - Soekris and Alix Boards
  - Asus WL500GP
  - Fonera 2 and Meshcube
- libgphoto needs
  - libusb, libexif, libjpeg, libpthread, libltdl, libiconv
- Some change is needed on the Makefile
  - with-drivers=ptp2



# How to use Gphoto

1. Detection of camera
2. Setup capture target and settings
3. Testcapture to read
  - apperture value
  - exposure value
  - capture mode
4. Start capture and download

# Command line tools

gphoto --summary for information

gphoto --list-ports (for more than one cam)

gphoto2 --list-config shows config options

## **Example:**

gphoto --get-config=capturetarget

Label: Capture Target

Type: RADIO

Current: Internal RAM

Choice: 0 Internal RAM

Choice: 1 Memory card



# Things to know

Gphoto on OpenWRT devices only support PTP mode

Setup of Camera in ptp mode (not mass stor.)

The Camera need external Power and

The Camera has to turn on automatically

and for sure the Firmware has to support the capture-image feature

# Making a Panoramic Photo

## Camera system with rotor

- + only one camera
- + one setup for all pictures
- not realtime in the picture
- shaking images in timelaps videos

## Multicamera system

- + realtime in motion
- + stil images in timelaps videos
- more expensive more maintenance
- one of the cams fail = no panotamic picture

# Panoramic Software

Opensource tools like nona (hugin) and enblend  
automatic processing for long term documentation

very complex to generate a stitching configuration PTO file  
when camera setup is moving reconfiguration is needed

fast cpu is needed for stitching process and blending

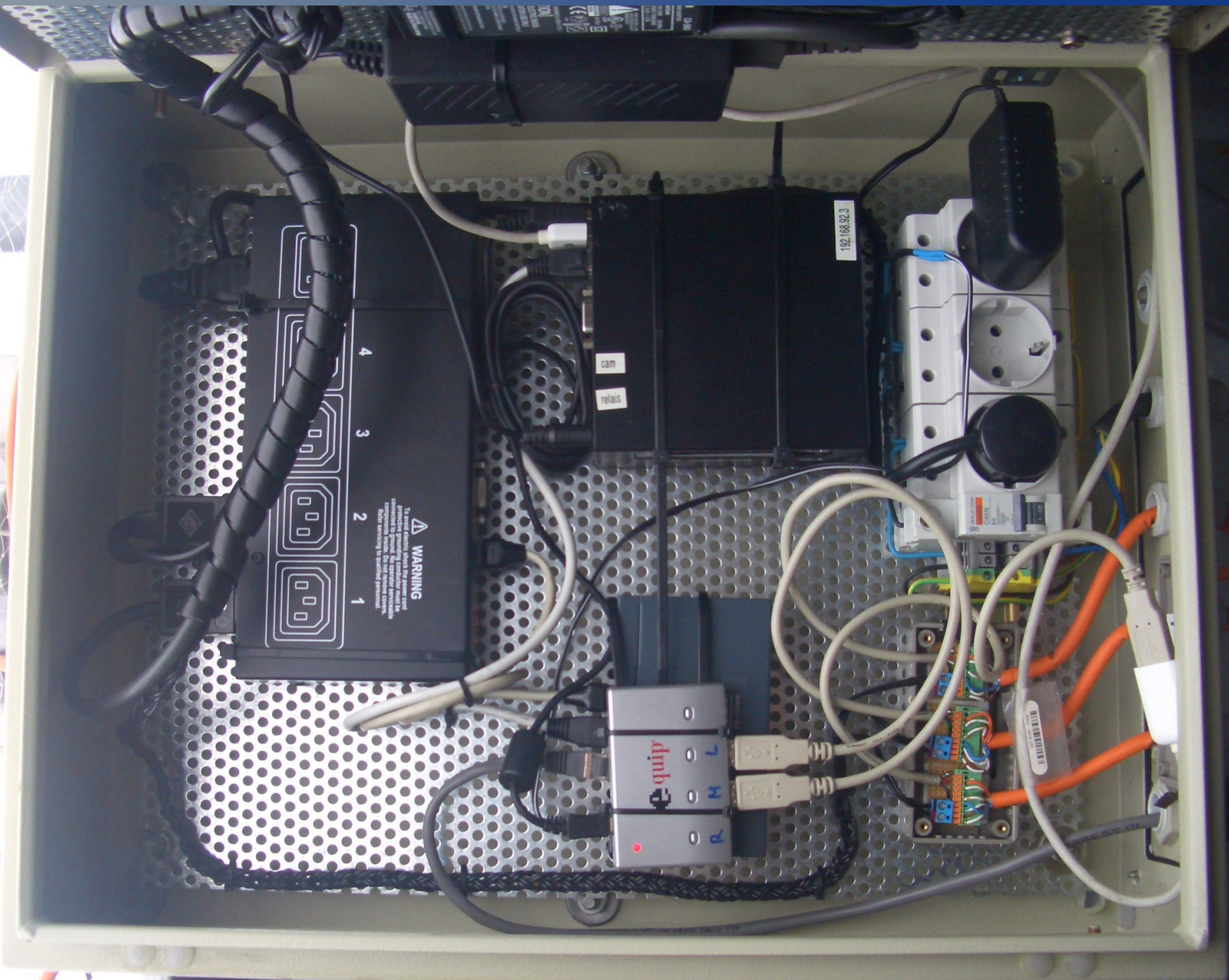


CONVERSION LENS ADAPTER

LINDY  
USB Extender

Cable Box





4  
3  
2  
1

**WARNING**  
To avoid electric shock the power cord  
must be disconnected before any work is  
carried out on the terminals.  
Refer to the manufacturer's instructions  
for further information.  
Refer to the manufacturer's instructions  
for further information.

cam  
relais

quip

R  
M  
L  
R

192.168.92.3

Barcode label















Thanks

Any questions?