

Exiv2 - Feature #1118

Add support for ZEISS Loxia 2/50 lens

19 Sep 2015 07:11 - Eugen Neu

Status:	Closed	Start date:	19 Sep 2015
Priority:	Normal	Due date:	
Assignee:	Robin Mills	% Done:	100%
Category:	lens	Estimated time:	2.00 hours
Target version:	0.26		
Description			
Hi,			
I am using a ZEISS Loxia 2/50 lens on a Sony Alpha 7 II (ILCE-7M2) body. The lens seems not to be supported by my currently installed version (0.24 on Ubuntu 15.04) and I could not find an entry in the current source code for it. Find below the necessary information and a sample jpeg. If there is anything else I could try or provide, I would be glad to help.			
Kind regards, Eugen			
exiv2 output from raw file: \$ exiv2 -pt DSC00479.ARW grep -ai lens Exif.Sony2.LensID Long 1 E-Mount, T-Mount, Other Lens or No Lens Exif.Photo.LensSpecification Rational 4 500/10 500/10 20/10 20/10 Exif.Photo.LensModel Ascii 10 E 50mm F2			
exiv2 output from jpeg file: exiv2 -pt LRG_DSC00972.JPG grep -ai lens Warning: Directory Sony1, entry 0x0000 has unknown Exif (TIFF) type 0; setting type size 1. Warning: Directory Sony1, entry 0x0000 has unknown Exif (TIFF) type 0; setting type size 1. Exif.Sony1.LensID Long 1 E-Mount, T-Mount, Other Lens or No Lens Exif.Photo.LensSpecification Rational 4 500/10 500/10 20/10 20/10 Exif.Photo.LensModel Ascii 10 E 50mm F2			
Lens name: ZEISS Loxia 2/50			
Link to product page: http://www.zeiss.com/camera-lenses/en_de/camera_lenses/loxia/loxia250.html			

History

#1 - 19 Sep 2015 09:37 - Robin Mills

- Status changed from New to Assigned
- Assignee set to Robin Mills
- Target version set to 0.26
- % Done changed from 0 to 50

Thanks for reporting this and providing the sample JPG. And congrats on your new camera and lens. My neighbour has that camera and says its wonderful.

I'm using the current trunk:

```
644 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose --version --grep svn --grep version
exiv2 0.25 001900 (64 bit build)
version=4.2.1 Compatible Apple LLVM 7.0.0 (clang-700.0.72)
svn=3947
id=$Id: version.cpp 3931 2015-09-08 13:01:05Z robinwmills $
```

I've run your file with the -pv and -pt options. -pv = print 'vanilla values' -pt = print 'translated'.

'Vanilla values' means we present raw data.

```
646 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pv --grep Lens http://dev.exiv2.org/attachments/download/834/LRG_DSC00972.JPG
Warning: Directory Sony1, entry 0x0000 has unknown Exif (TIFF) type 0; setting type size 1.
Warning: Directory Sony1, entry 0x0000 has unknown Exif (TIFF) type 0; setting type size 1.
0xb027 Sony1      LensID          Long           1    65535
0xa432 Photo      LensSpecification Rational      4    500/10 500/10 20/10 20/10
0xa434 Photo      LensModel       Ascii         10   E 50mm F2
647 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

'Translated' means we pass values through a presentation filter to make them more human readable.

```
645 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pt --grep Lens http://dev.exiv2.org/attachments/download/834/LRG_DSC00972.JPG
Warning: Directory Sony1, entry 0x0000 has unknown Exif (TIFF) type 0; setting type size 1.
Warning: Directory Sony1, entry 0x0000 has unknown Exif (TIFF) type 0; setting type size 1.
Exif.Sony1.LensID          Long           1    Manual lens
Exif.Photo.LensSpecification Rational      4    500/10 500/10 20/10 20/10
Exif.Photo.LensModel       Ascii         10   E 50mm F2
```

So it seems:

Exif.Sony1.LensID = 65535 = "Manual lens"
 Long 65535 == SShort -1, it's a kind of "don't know, or not a Sony Lens"

Exif.Photo.LensModel is an Ascii string of 10 bytes that your camera wrote.
 Perhaps E = ZEISS

Exif.Photo.LensSpecification Rational 4 500/10 500/10 20/10 20/10
 Exif uses rational to represent a floating point number. 500/10 = 50.0, 20/10 = 2.0

This is an array of 4 Rationals which record min/max Fnumbers and Focal length for the lens . The code in tags.cpp says:

```
TagInfo(0xa432, "LensSpecification", N_("Lens Specification"),
        N_("This tag notes minimum focal length, maximum focal length, "
          "minimum F number in the minimum focal length, and minimum F number "
          "in the maximum focal length, which are specification information "
          "for the lens that was used in photography. When the minimum F "
          "number is unknown, the notation is 0/0"),
        exifId, otherTags, unsignedRational, 4, printValue),
```

Our wonderful contributor Niels has been looking after our MakerNote support for several years and has recently started a college course in addition to his full-time demanding job. I will take on support for MakerNotes, however this is my first case in this part of the code. I don't really think I can take further action on this.

Perhaps Niels or Andreas will step into this and provide a solution.

#2 - 19 Sep 2015 09:59 - Robin Mills

- % Done changed from 50 to 100

- Estimated time set to 2.00 h

I've downloaded the latest version of Phil's wonderful exiftool (v10.02) and here's the output:

```
512 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiftool -all LRG_DSC00972.JPG | grep -e Lens -e F
File Name      : LRG_DSC00972.JPG
File Size      : 525 kB
File Modification Date/Time : 2015:09:19 10:48:47+01:00
File Access Date/Time   : 2015:09:19 10:56:50+01:00
File Inode Change Date/Time : 2015:09:19 10:48:47+01:00
File Permissions : rw-r--r--
File Type      : JPEG
File Type Extension : jpg
F Number       : 4.0
Flash         : Off, Did not fire
Focal Length   : 50.0 mm
Flashpix Version : 0100
Interoperability Index : R98 - DCF basic file (sRGB)
File Source    : Digital Camera
Focal Length In 35mm Format : 50 mm
Lens Info      : 50mm f/2
Lens Model     : E 50mm F2
MPF Version    : 0100
MP Image Flags : Representative image
MP Image Format : JPEG
Scale Factor To 35 mm Equivalent: 1.0
```

```
Field Of View      : 39.6 deg
Focal Length      : 50.0 mm (35 mm equivalent: 50.0 mm)
513 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

As you can see, exiftool also reports E 50mm F2.

#3 - 21 Sep 2015 18:20 - Eugen Neu

Dear Robin,

first of all thank you for the very fast reply and for your work! I'm not sure if I understand your last update correctly. Does this mean that everything is fine, no additional steps are necessary and the lens will just report as "E 50mm F2" in the future? Or did you add something to the code and it will be released with 0.26?

I looked up exiftool and the lens name and found the following:

```
6553.37 = Zeiss Loxia 50mm F2
http://www.sno.phy.queensu.ca/~phil/exiftool/TagNames/Sony.html
```

However, I am new to the combination of digital photography and open source software. Therefore I am still in the "learning phase" and try to understand how all the different tools (exiv2, exiftool, darktable) are interconnected and how this is related to MakerNote (file format?) and what has to happen to make everything work together. Sorry, if the answer to my question is pretty obvious.

Kind regards,
Eugen

#4 - 21 Sep 2015 19:40 - Robin Mills

Well, what I was trying to say is "exiftool and exiv2" are reporting the same information and therefore I do not intend further action.

```
$ exiftool -ver
10.02
$ exiftool LRG_DSC00972.JPG | grep -i Lens
Lens Info      : 50mm f/2
Lens Model     : E 50mm F2
$ exiv2 -pt -g Lens LRG_DSC00972.JPG 2>/dev/null
Exif.Sony1.LensID      Long      1  Manual lens
Exif.Photo.LensSpecification Rational  4  500/10 500/10 20/10 20/10
Exif.Photo.LensModel   Ascii    10  E 50mm F2
$
```

Your discovery on this page <http://www.sno.phy.queensu.ca/~phil/exiftool/TagNames/Sony.html> of:

```
6553.37 = Zeiss Loxia 50mm F2
```

The page does say: "*Special logic is employed to identify the attached lens when a Metabones Canon EF adapter is used.*"

Do you have output from exiftool which reports a Zeiss lens, or do you also get "**Lens Model** : **E 50mm F2**" ?

Although I've been contributing to Exiv2 for 7 years, this is my first dive into this part of the code. So we're learning together!

Exiv2, darktable and exiftool

Exiv2 is a command-line application *exiv2* and a library *libexiv2*. The code is written in portable C++.

darktable use *libexiv2* as a shared library. *darktable* and *exiv2* will normally report the same metadata.

exiftool is a *command-line utility* and *Perl library*. The underlying implementation technology is quite different. Generally, *exiftool* leads the metadata community. It's very good when you have perl on the system.

exiv2 and *exiftool* are not competitors. http://dev.exiv2.org/projects/exiv2/wiki/How_does_Exiv2_compare_to_Exiftool

MakerNote

The MakerNote is a single Exif tag (0x927c) into which the manufacturer can store anything he wishes in a format of his choosing.

<http://www.exiv2.org/makernote.html>

For you:

```
$ exiv2 -pt -g Maker LRG_DSC00972.JPG 2>/dev/null
Exif.Photo.MakerNote      Undefined 37228 (Binary value suppressed)
Exif.MakerNote.Offset     Long      1  922
Exif.MakerNote.ByteOrder  Ascii    3  II
$
```

You have 37k bytes of stuff. *libexiv2* (and *exiftool*) know how to decode most of that data and report it as Exif.Sony1 tags:

```
$ exiv2 -pt -g Sony LRG_DSC00972.JPG 2>/dev/null
```

```

Exif.Sony1.Contrast           SLong      1  0
Exif.Sony1.Saturation        SLong      1  0
Exif.Sony1.AutoHDR           Long        1  Off
Exif.Sony1.ShotInfo          Undefined 390 (Binary value suppressed)
Exif.Sony1.ColorReproduction Ascii       16  Standard
Exif.Sony1.ColorTemperature  Long        1  0
Exif.Sony1.ColorCompensationFilter Long        1  0
Exif.Sony1.SceneMode         Long        1  Standard
Exif.Sony1.ZoneMatching      Long        1  ISO Setting Used
Exif.Sony1.DynamicRangeOptimizer Long        1  Auto
Exif.Sony1.ImageStabilization Long        1  On
Exif.Sony1.ColorMode         Long        1  Standard
Exif.Sony1.FullImageSize     Long        2  4000 x 6000
Exif.Sony1.PreviewImageSize  Long        2  1080 x 1616
Exif.Sony1.FileFormat        Byte        4  (3 3 1 0)
Exif.Sony1.Quality           Long        1  Standard
Exif.Sony1.FlashExposureComp SRational   1  0 EV
Exif.Sony1.WhiteBalanceFineTune Long        1  0
Exif.Sony1.WhiteBalance     Long        1  Auto
Exif.Sony1.SonyModelID       Short       1  (340)
Exif.Sony1.LensID            Long        1  Manual lens
Exif.Sony1.ExposureMode      Short       1  Aperture priority
Exif.Sony1.JPEGQuality       Short       1  n/a
Exif.Sony1.FlashLevel        SShort      1  Normal
Exif.Sony1.ReleaseMode       Short       1  Burst
Exif.Sony1.SequenceNumber    Short       1  (1)
Exif.Sony1.AntiBlur          Short       1  On (Shooting)
Exif.Sony1.DynamicRangeOptimizer Short       1  Standard
Exif.Sony1.IntelligentAuto   Short       1  Off
Exif.Sony1.WhiteBalance2     Short       1  Auto
542 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

#5 - 23 Sep 2015 19:20 - Eugen Neu

Robin,

thank you once again for your detailed description. I really appreciate that.

Do you have output from exiftool which reports a Zeiss lens, or do you also get "Lens Model : E 50mm F2" ?

No, I get exactly the same exiftool output as you do.

"Special logic is employed to identify the attached lens when a Metabones Canon EF adapter is used."

I think this comment only concerns lenses that are adapted to the camera using a Metabones adapter. However, the Loxia is a native E-Mount lens.

Actually, I am perfectly fine with the camera reporting as "E 50mm F2". The reason why I thought this would be a problem in the first place was because I loaded a raw file into darktable and when I changed to the "lens correction" module, the lens was reported as

```

E 50mm F2
camera/lens not found - please select manually

```

I looked it up and came to this page

<https://www.darktable.org/2015/02/on-lens-detection-and-correction/>

where it says at some point that one should fill a feature request here.

I found one additional interesting point when I compared the output from the raw file with the output of the jpg file. There seem to be some additional "Lens Type" fields which are not present in the jpg file. exiv2 does not report them. Unfortunately, the raw files are larger than the file size limit. Hence, I can't attach one.

```

$ ./exiftool -ver
10.02
$ ./exiftool -all DSC00479.ARW|grep -i Lens
Lens Type           : E-Mount, T-Mount, Other Lens or no lens
Lens Spec           : E 50mm F2
Lens Zoom Position  : 0%
Lens Mount 2       : E-mount
Lens Type 3         : Unknown (49232)
Lens E-mount Version : 1.50
Lens Firmware Version : Ver.02
Lens Mount          : E-mount
Lens Format          : Full-frame
Lens Type 2         : Unknown (49232)

```

```
Lens Spec Features      : E
Lens Info              : 50mm f/2
Lens Model            : E 50mm F2
Lens ID               : E 50mm F2
```

```
$ exiv2 -V
exiv2 0.24 001800 (64 bit build)
$ exiv2 -pt -g Lens DSC00479.ARW
Exif.Sony2.LensID      Long          1  E-Mount, T-Mount, Other Lens or No Lens
Exif.Photo.LensSpecification Rational      4  500/10 500/10 20/10 20/10
Exif.Photo.LensModel   Ascii         10 E 50mm F2
```

I am not sure how to proceed from here. Do you think it would be helpful to know what some commercial tools or the Sony Image Data Converter reports? I don't have installed them but I could try to find out. Or should we leave it that way for the moment and I contact the darktable-user mailing list and try to find out why the camera/lens is not detected properly?

Kind regards
Eugen

#6 - 23 Sep 2015 19:41 - Robin Mills

Eugen:

Can I ask the obvious question "What's bothering you, buddy?". Do you want darktable to recognise your equipment precisely?

There are a couple of interesting fields in the exiftool "Raw" file output:

```
Lens Type 2           : Unknown (49232)
Lens Spec Features    : E
```

Can you send me the raw file, please? There's a file-size limit in Redmine. I think it's 20mb. If it's bigger than that, can you share it on Dropbox (or any other file-sharing service). As a last resort, email it to me: robin@clanmills.com

You could try Adobe's DNG (free) convertor to convert raw files into "Digital Negative". I believe DNG is a kind catch all "Grand Unified File Format for Raw Digital Images". And try that in darktable.

I don't have any suggestions about how to proceed with marketable. I occasionally have dealings with the darktable engineers, however I've never really used the application. I've never heard of Sony Image Data Converter.

#7 - 25 Sep 2015 07:27 - Eugen Neu

Robin,

this made me laugh. :) Good question. I just wanted to try the lens correction function in darktable, did notice that the camera/lens combo was not supported, one thing came after the other and now I am here. I will check Adobe DNG. Sony's Image Data Converter is the raw processor the camera comes with. I will try a few things over the next days and will send an update when I have gathered enough infos. In the mean time find below the link to a raw file:

<https://spideroak.com/share/NZSXK/sample/home/neu/Pictures/share/DSC00479.ARW>

Kind regards,
Eugen

#8 - 25 Sep 2015 08:55 - Robin Mills

Thanks for the file. On Wednesday I had a look on the darktable web site and I see they dumped me (exiv2) with the responsibility for their metadata support. I'd do the same if I were working on darktable. Metadata is a minor part of darktable and they are wrapping our code in their GUI.

We've had a discussion, both on the darktable forum and ours, about providing a file for camera/accessory updates. This would let you "tweak" our recognition. So you could define 65535 to be your lens. And new cameras/accessories could be added between releases of Exiv2. We'd like to do this project, however we don't have a volunteer and I'm fully loaded for v0.26.

I dumped your file with the -pS option in v0.25 (-pS = print Structure). I asked for the file to run this command. There's nothing interesting hidden in the file.

```
$ exiv2 -pS https://spideroak.com/share/NZSXK/sample/home/neu/Pictures/share/DSC00479.ARW
STRUCTURE OF TIFF FILE (II): https://spideroak.com/share/NZSXK/sample/home/neu/Pictures/share/DSC00479.ARW
address | tag | type | count | offset | value
-----|---|-----|-----|-----|-----
10 | 0x00fe | NewSubfileType | LONG | 1 | 1
22 | 0x0103 | Compression | SHORT | 1 | 6
34 | 0x010e | ImageDescription | ASCII | 32 | 230
46 | 0x010f | Make | ASCII | 5 | 262 | SONY
58 | 0x0110 | Model | ASCII | 9 | 268 | ILCE-7M2
70 | 0x0112 | Orientation | SHORT | 1 | 8
```

82		0x011a	XResolution		RATIONAL		1		278		278/0
94		0x011b	YResolution		RATIONAL		1		286		286/0
106		0x0128	ResolutionUnit		SHORT		1		2		2
118		0x0131	Software		ASCII		15		294		ILCE-7M2 v1.21
130		0x0132	DateTime		ASCII		20		310		2015:09:14 14:46:54
142		0x014a	SubIFDs		LONG		1		147600		147600
154		0x0201	JPEGInterchangeFormat		LONG		1		148642		148642
166		0x0202	JPEGInterchangeFormatLeng		LONG		1		1114012		1114012
178		0x0213	YCbCrPositioning		SHORT		1		2		2
190		0x8769	ExifTag		LONG		1		436		436
202		0xc4a5	PrintImageMatching		UNDEFINED		106		330		...
214		0xc634	DNGPrivateData		BYTE		4		53658	r
38428		0x00fe	NewSubfileType		LONG		1		1		1
38440		0x0103	Compression		SHORT		1		6		6
38452		0x010e	ImageDescription		ASCII		32		38600		
38464		0x010f	Make		ASCII		5		38632		SONY
38476		0x0110	Model		ASCII		9		38638		ILCE-7M2
38488		0x0112	Orientation		SHORT		1		8		8
38500		0x011a	XResolution		RATIONAL		1		38648		38648/0
38512		0x011b	YResolution		RATIONAL		1		38656		38656/0
38524		0x0128	ResolutionUnit		SHORT		1		2		2
38536		0x0131	Software		ASCII		15		38664		ILCE-7M2 v1.21
38548		0x0132	DateTime		ASCII		20		38680		2015:09:14 14:46:54
38560		0x0201	JPEGInterchangeFormat		LONG		1		38700		38700
38572		0x0202	JPEGInterchangeFormatLeng		LONG		1		13365		13365
38584		0x0213	YCbCrPositioning		SHORT		1		2		2

\$

You will of course notice that Exiv2 can read files using https. Good, eh? RemotelO (http, https, ftp, sftp, ssh) is an optional feature of Exiv2 that was added in v0.25. By default, it's not available (although http is always available). To build webready support, build Exiv2 as follows:

```
$ make config
$ ./configure --enable-webready
$ make -j
$ sudo make install
```

This requires libcurl, openssl and libssh which you should download, build and install.

#9 - 25 Sep 2015 09:42 - Robin Mills

I like your photo. Pyracantha and ivy I believe. I was cutting my neighbour's pyracantha last weekend. Damn thing suddenly moved and ripped my finger. I needed 4 stitches at the emergency room.

#10 - 10 Oct 2015 09:48 - Robin Mills

- Status changed from Assigned to Resolved

I'm going to mark this "Resolved" which means that I do not intend to do any more work on this. Of course, if you provide further information it will be investigated. This issue will be closed during review before shipping v0.26.

#11 - 06 Dec 2015 21:12 - Robin Mills

- Status changed from Resolved to Closed

Files

LRG_DSC00972.JPG	525 KB	19 Sep 2015	Eugen Neu
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