<ch> two digit for the channel, even if it is a single channel collection

3. Overview

Bio-Rad .PIC files contain one or more images and information about how the image was collected. This means for example that a complete Z series can be saved in a single file.

Each file consist of four main parts as is shown in the diagram:

- There will always be a header that is 76 bytes long. The header contains basic information such as the number and size of the images.
- The header is followed by a number of images. These images will all have the same x and y dimensions and can either be byte or word data.
- Following the images, there will optionally be a number of "notes". Each "note" is 96 bytes long and can contain 80 characters of text as well as other information.
- Following the notes, there is an optional RGB lookup table that is 768 bytes long.

Each of these blocks is described more fully in the following sections.

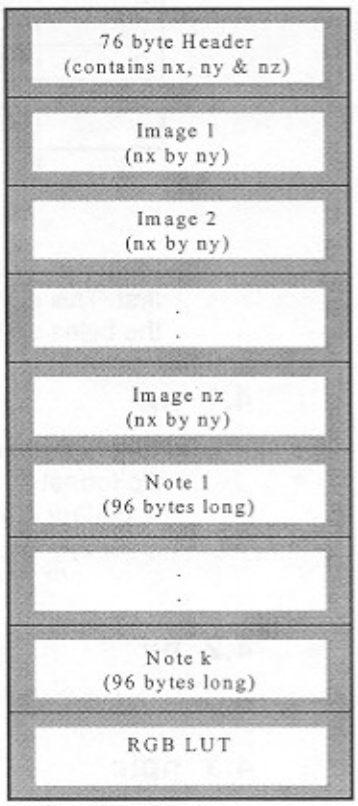

Figure 1 - Overview Of File Format

4. Header

The following table defines this structure. A 'C' structure for this is defined in Figure 32 on page 25 of this document.

Size (bytes)	Offset	"C" definition	Description
2	0	int nx	Image width in pixels
2	2	int ny	Image height in pixels
2	4	int npic	Number of images in file
2	6	int ramp1_min	LUT 1 ramp minimum
2	8	int ramp1_max	LUT 1 ramp minimum
4	10	NOTE *notes	Pointer to first note
2	14	int byte_format	1 if 8 bits per pixel, 0 if 16 bits per pixel
2	16	int image number	"Current" image in file
32	18	char name[32]	File name
2	50	int merged	Non-zero if a merged file
2	52	unsigned color1	LUT1 colour status
2	54	unsigned file_id	Always set to 12345

Size (bytes)	Offset	"C" definition	Description
2	56	int ramp2_min	LUT 2 ramp minimum
2	58	int ramp2_max	LUT 2 ramp minimum
2	60	unsigned color2	LUT2 colour status
2	62	int edited	
2	64	int lens	Integer part of lens magnification
4	66	float mag_factor	Current lens magnification
6	70	Reserved	Not currently used
76			

Figure 2 - Format of Header

Please note that where there is a two byte value, the least significant byte is first. This is the default for Intel based processors - it will be necessary to swap the bytes on Motorola based systems.

4.1 nx

This is the width in pixels for all of the images in the file. Note that some other file formats expect that the images will be padded up to a four or eight byte boundary - this is not the case for Bio-Rad pic files. The length of each image is always

$$nx \times ny$$

4.2 ny

This is the height of the image in pixels.

4.3 npic

The number of images in the file. Must be greater than or equal to one. For example, with a Z series, this will be the number of sections.

4.4 ramp1_min

When brightness and contrast adjustments are made to an image, the "bytes" in the image are not necessarily changed. The ramp values for pixels with intensity zero and intensity 255 are saved in the ramp1_min and ramp1_max so that when the image is next loaded, these values can be used to reset the brightness and contrast. See section 9 on page 28 for details of how brightness and contrast values are converted into ramp_min and ramp_max.

4.5 ramp1_max

When brightness and contrast adjustments are made to an image, the "bytes" in the image are not necessarily changed. The ramp values for pixels with intensity zero and intensity 255 are saved in the ramp1_min and ramp1_max so that when the image is next loaded, these values can be used to reset the brightness and contrast. See section 9 on page 28 for details of how brightness and contrast values are converted into ramp_min and ramp_max.

4.6 *notes

This is a 4 byte pointer to the first note - however, the *value* in this variable should *not* be used when reading a file - it should just be used to determine if there are notes. If it is non-zero then NOTEs are present in the file, otherwise

there are no notes in the file. See section 5 on page 11 for details on the notes. The notes will start at an offset of

$$76 + (nx \times ny \times npic)$$

bytes from the start of the file if the data is byte format.
If the data is in *word* format, the notes will start at an offset of

$$76 + (nx \times ny \times npic \times 2)$$

bytes from the start of the file.

4.7 byte_format

If this value is set to 1 then each pixel in the image data is 8-bits otherwise each pixel is 16-bits in size. For the MRC-1024, all data is currently in byte format.

4.8 image_number

Once the file has been loaded into memory, this field is used to track which image within the file is currently displayed. The value of this field in the file is currently not used.

4.9 name

This the name of the file when it was saved. It may optionally include the pathname. It is zero terminated and is 32 bytes long.