Pentax K-50 Notes

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This report describes the exposure and focus features of the K-50 camera for taking still photographs with automatic lenses. Nothing is said about the camera's movie mode or user modes. Some button customisation is discussed but only for those options that particularly enhance exposure management.

Contents

1 Introduction

The Pentax K-50, like other modern digital SLR cameras, has sophisticated automatic focus and exposure systems. Here we explore some of the settings and options associated with these features. Only the default e-dial and green button settings are described, but a recommended customisation of the `RAW/Fx` and `AF/AE-L` is given.

The automatic exposure capability of the K-50 is excellent, and leaving the camera in Auto Picture Mode is a good choice for point and shot photography. Program Mode is a flexible alternative for automatic exposure control that can be quickly converted to Shutter Priority Mode or Aperture Priority Mode. However, unlike Auto Picture Mode, it does not manage any of the general camera options.

Automatic focus works well in most lighting conditions and is convenient for point and shoot photography. However manual focus can be used for more difficult subjects and lighting conditions.

2 Shutter Release Button

With autofocus enabled pressing the shutter release button halfway focuses the lens on the subject. This *focus lock* is maintained as long as the shutter release button is held halfway even when the view is changed. Completely depressing the shutter release button takes a photograph. In some focus and capture modes, the shutter will not release if there is no focus lock.

The camera can be configured to also lock its exposure settings when the shutter release button is pressed halfway (see §4.7).

3 Focus

With a suitable lens, the camera's autofocus system can adjust the lens to obtain focus on the subject. The features and methods available depend on whether the viewfinder or Live View is used to compose the photograph. There are three positions on the focus mode switch. Two of these, single (`AF.S`) and continuous (`C`) focus, are used with the viewfinder. Manual focus (`M`) can be used with the viewfinder and Live View.

3.1 Viewfinder

This is the default method used when the camera is switched on. It uses TTL phase-matching autofocus.

In general, when the shutter release button is pressed halfway the camera focuses its lens on the subject. When it gets a *focus lock*, the focus point used flashes red; the focus indicator ⬣ appears in the viewfinder and the monitor, and there is an optional beep. The focus indicator flashes if a lock cannot be obtained.

3.1.1 Focus Options

The type of autofocus used is selected by the focus mode switch. However, this selection can be overridden by some automatic and scene capture modes. The

mode being used is shown on the monitor.

Autofocus single mode (AF.S) is set by the focus mode switch (`AF.C`). The focus stays the same while the shutter release button is half pressed even if the camera or focused object move. This is good for static subjects and for the "focus lock and recompose" technique. The AF assist light will be used if it is too dark, but this can be disabled. In some capture modes, the camera will not allow shutter release without a focus lock.

Autofocus continuous mode AF.C is set by the focus mode switch (`C`). The subject is kept in focus by continuous adjustment while the shutter release button is pressed halfway. Once a lock is achieved, the camera will track the subject if it is judged to be moving. *Fully depressing the shutter release button will take the photograph even if there is no focus lock.*

Autofocus auto mode AF.A: is used when the camera is in Auto Picture Mode (see 4.2). Single or continuous operation is used depending on the subject detected by the camera.

It is not used in Scene Capture Mode, where single or continuous focus is explicit, depending on the scene type chosen by the user.

3.1.2 Focus Sensor Points

The camera can automatically choose from up to 11 focus points in the AF frame to find a subject to focus on, or a single point can be used to manually select a focus object. The AF frame is delineated in the viewfinder by fine black lines and shows where the focus points are located.

There are four autofocus active area options, which can be selected with:

- `INFO`
→ `AF Active Area`
- `OK` ↔ target option
- `OK` then • `MENU` to go to the status screen

Auto 5 points: The camera selects the optimum focus from five autofocus points even if the subject is not centred. This method is easy to use. It useful for quick shooting and moving subjects, but it it can get confused. This is the default method.

Auto 11 points: The camera selects the optimum focus from 11 autofocus points even if the subject is not centred. It has a larger active area, so it can be better for moving subjects, but there is more chance of a false lock.

Select: The user chooses the focusing point from 11 in the autofocus frame. This allows spot focusing on off center subjects. The focus point is selected using the `OK` button and the four-way controller. A short press of the `OK` button starts point selection, then a long press puts the four-way controller back to to normal.

Spot: Sets the focusing point to the centre of the viewfinder. This is normally used with focus lock to select an off centre focus before recomposing the frame.

3.2 Live View

In Live View the monitor is used to compose the picture, and the viewfinder is disabled. Live View is entered by pressing the `LV` button in standby mode.

Contrast detection autofocus is used, and the focus mode switch is mostly ignored, but manual focus can still be chosen. It is slower than the TTL phase-matching autofocus used with the viewfinder, but it offers some useful features such as face recognition. There appears to be more focus hunting in some conditions with Live View than with the viewfinder.

3.2.1 Focus Options

Four Live View options are available which can be selected by:

- `INFO`

→ `Contrast AF`

- `OK` ↔ target option
- `OK` then • `MENU` to go to the status screen

Face detection: Peoples faces are detected and tracked.

The target face must be in the AF frame, which is marked by white corners. The AF frame disappears when a face is detected. A yellow frame is shown round the main detected face, other faces are framed in white. These face frames are used for autofocus and exposure. Half pressing the shutter release button locks focus on the main face and its frame turns green. Fully pressing the shutter release button takes the photograph. This is the default Live View option.

Tracking: The in focused subject is tracked while the shutter release button is pressed halfway.

Initially, a small white square in the center represents the AF frame. This turns green when a lock is achieved and tracking begins. If tracking fails the square reverts to white.

Select: Focus is preformed in a designated area, which can be changed in size and location.

This AF frame is marked on the screen by four white corners. Pressing the shutter release button halfway locks focus and a green rectangle appears round the subject and the AF frame disappears.

Spot: Focus is on a small area in the middle of the view.

The focus pint is marked by a small white square. Half pressing the shutter release button locks focus and the square turns green.

In all cases pressing the shutter release button halfway attempts to acquires a focus lock. There is an option beep sound if this succeeds, and a green focus mark is show on the screen. If the camera cannot get a focus lock, the AF frame turns red.

3.3 Manual Focus

To focus a lens manually, move the camera's focus mode switch to MF. Then look through the viewfinder and rotate the lens focus ring until the required focus is achieved.

The camera's focus sensors can help. If the shutter release button is pressed halfway, the focus indicator ⬣ will appear, and a beep will sound, when the subject comes into focus. In manual focus, fully pressing the shutter release button will take a picture even if there is no focus lock.

Unlike many legacy film SLR cameras, the K-50 does not have a special focusing screen that helps to achieve an accurate focus, so manual focusing can be difficult. However, digital preview (see §4.7) can be used to check the focus by enlarging the image.

Manual focus in Live View is similar. The focus mode switch is set to MF and the lens focus ring moved while the image is viewed on the camera's monitor. The focus can be improved by pressing the OK button, which magnifies the screen image. The rear e-dial can be used to change the magnification; the four-way controller can move the display area; and the green button changes the display area to the center. Finally, press the OK button again, or half press the shutter release button to return to normal Live View. Magnification is not available when the tracking option is used.

4 Exposure

The K-50 has an automatic exposure system that, depending on the camera's capture mode, controls shutter speed (seconds), aperture (f-number) and sensor sensitivity (ISO) to achieve a correct exposure.

The camera's built-in exposure meter determines an *exposure value* (EV) for the scene being photographed. This is a number that represents the many combinations of shutter speed and aperture for a given sensitivity that will give a correct exposure.

A *program line* (PLINE) provides the preferred shutter and aperture combination for a particular EV. More technically, a program line is a function that maps EV to a shutter/aperture value pair for a given sensitivity. The camera can use different program lines for its various auto and scene modes. For example, moving object mode will use a program line that has high shutter speeds. The camera's program mode has its own general purpose program line. Some Pentax cameras allow customisation of this program line but the K-50 does not (!).

The situation is actually a little more complicated because in some capture modes sensitivity can be also be automatically adjusted. So an EV solution can require the selection of shutter speed, aperture and sensitivity.

4.1 Capture Modes

The capture mode used by the camera is primarily selected by the camera's mode dial. Each capture mode allocates different functions to the front and rear e-dials, and the green button. These can be customized, but here we only look at the default functions.

When the mode dial is changed, the functions of the e-dials, green button, and RAW/FX and AF/AE-L buttons, are briefly shown on the camera monitor. There are 12 positions on the mode dial:

🎥	Movie mode (not discussed in this report)
AUTO	Auto picture mode (§4.2)
SCN	Scene mode (§4.3)
P	Program automatic exposure (§4.4.1)
Tv	Shutter priority automatic exposure (§4.4.2)
Av	Aperture priority automatic exposure (§4.4.3)
Sv	Sensitivity priority automatic exposure (§4.4.4)
TAv	Shutter and aperture priority automatic exposure (§4.4.5)
M	Manual exposure (§4.5.1)
B	Bulb exposure (§4.5.2)
U1	User customisable mode (not discussed in this report)
U2	User customisable mode (not discussed in this report)

The exposure mode is shown on the camera's monitor.

4.2 Auto Picture Mode (AUTO)

When AUTO is selected on the mode dial, the camera chooses shutter speed, lens aperture, and many other settings depending on what it thinks is the type of subject being photographed. The camera chooses from the following subject types: portrait, landscape, macro, moving object, night scene, portrait, sunset, blue sky, forest and standard. The last of which is a used when none of the others are suitable.

Aperture and shutter speed are always automatic but, depending on the mode, some camera settings can still be changed. When the viewfinder is used, focus is set to AF.A mode (see §3.1.1). In Live View, the focus option (Contrast AF) (§3.2.1) cannot be manually set.

4.3 Scene Mode (SCN)

Scene mode, SCN on the mode dial, is similar to automatic picture mode, but the user explicitly chooses the type of subject that is being photographed. They can choose from: portrait, landscape, macro, moving object, night scene portrait, sunset, blue sky, forest, night scene, night scene HDR, night snap, food, pet, kids, surf and snow, backlight silhouette, candlelight, stage lighting and museum. The camera then automatically controls such things as the exposure program line, colour palette (image finishing tone), white balance, auto focus, drive mode and flash.

Aperture and shutter speed are always automatic but, depending on the chosen subject type, other camera settings can be changed. When the view finder is used the focus option, single or continuous, is preselected set for each scene type. With Live View, focus options (Contrast AF) (§3.2.1) are only available for some scene types.

Entry	Mode	Shutter	Aperture	Sensitivity
Mode Dial	P	auto[a]	auto[a]	auto/manual
Mode Dial	Tv	manual	auto	auto/manual
Mode Dial	Av	auto	manual	auto/manual
Mode Dial	Sv	auto	auto	manual
Mode Dial	TAv[b]	manual	manual	auto
Mode Dial	M[c]	manual	manual	manual[d]
P mode	Tv_{HYPER}[e]	manual	auto	auto/manual
P mode	Av_{HYPER}[e]	auto	manual	auto/manual

[a]Using an e-dial to modifying the shutter or aperture setting changes P mode to Tv-hyper or Av-hyper respectively.

[b]The green button in TAv mode sets shutter, aperture and sensitivity for a correct exposure value.

[c]The green button in M mode sets shutter and aperture for a correct exposure value.

[d]ISO must be set to a fixed value to enter M mode. If ISO is set to auto then selecting M on the control dial will result in TAv.

[e]The green button resets hyper modes to P mode.

Table 1: K-50 Exposure Mode Behaviour

4.4 Automatic Exposure Modes

There are five modes where the user has more control over shutter speed, aperture and sensitivity. In these these modes there is still some automatic exposure management using the standard program line. However, other settings such as colour palette and drive mode are manually controlled.

The following describes the exposure modes selected by the camera's mode dial with *default e-dial, green button and shutter release button behaviour.*

4.4.1 Program Automatic Exposure (P)

Shutter speed and aperture are automatically controlled to give the correct exposure. Sensitivity is also controlled if it is set to automatic. *This is mode gives the camera completely automatic exposure control, with the user managing the camera's other options.*

Program Mode does not give as much support as Auto Picture Mode or Scene Mode but is is very flexible. The front and rear e-dials can be used to manually select shutter speed or aperture. This immediately moves the camera to Shutter Priority Mode or Aperture Priority Mode as appropriate, and Tv_{HYPER} or Av_{HYPER} is displayed on the camera's monitor. *Pressing the green button puts the camera back to normal Program Mode.*

The Av and Tv modes are referred to as hyper modes because they are returned to Program Mode with the green button. Otherwise, they are identical to the normal Shutter Priority Mode and Aperture Priority Mode.

front e-dial		`Tv`	Change shutter speed, go to Tv_{HYPER}
back e-dial		`Av`	Change aperture, go to Av_{HYPER}
green button		→`P`	Return to P mode

4.4.2 Shutter Priority Automatic Exposure (Tv)

The shutter speed is selected using the front e-dial, and the aperture is automatically set for a correct exposure. The green button does nothing. When sensitivity is automatic, the ISO setting can also change. Normally the camera tries to use the minimum sensitivity possible. This mode is entered by setting the mode dial, or as a hyper mode (Tv_{HYPER}) from Program Mode.

front e-dial		`Tv`	Change shutter speed
back e-dial		--	
green button	⦿	--	

4.4.3 Aperture Priority Automatic Exposure (Av)

The aperture is selected using the rear e-dial, and the shutter speed is automatically set for a correct exposure. When sensitivity is automatic, the ISO setting can also change. Normally the camera tries to use the minimum sensitivity possible. This mode is entered by setting the mode dial, or as a hyper mode (Av_{HYPER}) from Program Mode.

front e-dial		--	
back e-dial		`Av`	Change aperture
green button	⦿	--	

4.4.4 Sensitivity Priority Automatic Exposure (Sv)

The sensitivity is selected using the rear e-dial. The shutter speed and aperture are automatically set for the correct exposure.

front e-dial		--	
back e-dial		`ISO`	Change sensitivity
green button	⦿	--	

4.4.5 Shutter and Aperture Priority Automatic Exposure (TAv)

The shutter speed and aperture are selected using the front and rear e-dials. The sensitivity is automatically adjusted for a correct exposure.

Pressing the green button automatically resets the shutter, aperture and sensitivity for a correct exposure on the program line (`PLINE`).

There are also modes that cannot be directly selected with the mode dial. They are entered from one of the primary dial modes.

front e-dial		`Tv`	Change shutter speed
back e-dial		`Av`	Change aperture
green button	⦿	`PLINE`	Reset to standard exposure

4.5 Manual Exposure

There are two manual modes where the camera does less to help with finding correct exposure.

4.5.1 Manual Exposure (M)

Shutter speed, aperture and sensitivity are all manually controlled. The front and back e-dials control shutter and aperture. The up button of the four-way control gives access to sensitivity setting. *Manual mode cannot be selected if sensitivity is set to automatic.* Shutter and Aperture Priority Mode (§4.4.5) will be used instead.

The camera's internal exposure sensor can be used to ascertain the correct exposure, or a separate exposure meter can be used. The camera shows exposure with its EV bar scale in the viewfinder or Live View display. This is the display used for exposure compensation (§4.6) in automatic modes, but here it shows over or under exposure. The exposure is correct if there is no side bar shown.

There is still an automatic exposure option. Pressing the green button automatically resets the shutter and aperture for the correct exposure on the same program line as in Program Mode (§4.4.1).

front e-dial		`Tv`	Change shutter speed
back e-dial		`Av`	Change aperture
green button		`PLINE`	Reset to recommended exposure

4.5.2 Bulb Exposure (B)

The shutter remains open as long as the shutter button stays pressed. The lens aperture is controlled by the rear e-dial. Sensitivity is selected via the top button of the four-way controller.

This mode is often used for night time and astronomical photography. Exposure is not determined by the camera, and EV compensation and AE lock do not work. Shake reduction is disabled so a tripod should be used.[1] A wired or wireless remote shutter control should be used to minimise camera shake and possibly manage very long shutter times.

front e-dial		--	
back e-dial		`Av`	Change aperture
green button		--	

4.6 Exposure Compensation

Exposure compensation can be used to adjust an automatic exposure to deliberately overexpose or underexpose the picture. This can be used for difficult pictures such as back lit subjects, or sunsets.

Compensation can be used in all exposure modes apart from bulb (B) by pressing the ± button. The exposure compensation is then changed using the rear e-dial. Pressing the ± button, or half depressing the shutter release button, closes compensation mode. The compensation value is shown on the camera's monitor.

The correction can be reset to zero by pressing the green button in compensation mode. Compensation is not cancelled by switching the camera of and on, or changing its capture mode.

[1] When the optional GPS unit is attached, the ASTROTRACER function can be activated in `B` mode, which will track stellar motion during a long night sky exposure.

4.6.1 Exposure Bracketing

When bracketing is enabled the camera automatically takers three consecutive pictures with different exposure values: normal, overexposed and underexposed. Exposure compensation can still be used. To enable bracketing:

- ▶
→ `Exposure Bracketing`
↓ 👁 to adjust bracket value
- `OK`

Bracketing cannot be used when bulb mode (B) is set; in scene (SCN) modes with moving object, night scene, night scene HDR, pet or kid subjects; or when interval shooting, multi-exposure or HDR capture is set.

4.7 Exposure Lock and Preview

The shutter release button or the `AF/AE-L` button can both be programmed to perform exposure lock (AE lock), and the `RAW/FX` button can preview an image before actually taking a photograph. The customisation and subsequent behaviour of these buttons is:

Shutter Release: Pressing the button halfway engages the lock and releasing the button disengages the lock. There is an beep when the lock is engaged, and ✱ is displayed in the status screen and Live View screen. (The beep can be disabled.) To customise the shutter release button to include AE lock:

- `MENU`
→ `C` 1
↓ `AE-L with AF lock`
- `OK` ↓ `On`
- `MENU` to exit

AF/AE-L: The button toggles exposure lock. Pressing the button engages the lock and pressing it again disengages the lock. There is an beep when the lock is engaged or disengaged. While the lock is engaged, ✱ is displayed in the status screen, viewfinder, and Live View screen. (The beep can be disabled.) To customise the `AF/AE-L` button for AE lock:

- `MENU`
→ 📷 4
↓ `Button Customization`
- `OK` ↓ `AF/AE-L`
- `OK OK` ↓ `AE Lock`
- `OK` and repeated `MENU` to exit

The shutter release button option does exposure and focus locks at the same time, which is convenient but inflexible. In particular, it does not work well with the "focus lock and recompose" technique. The `AF/AE-L` button provides independent locks, so exposure and focus subjects can be different. If both are used, `AF/AE-L` takes priority and pressing the shutter release button halfway does not change exposure.[2]

[2]The author's preference is to customise `AF/AE-L` for AE lock, but to leave the shutter release button with just its default focus lock.

RAW/FX: This button gives a digital preview of a picture on the rear screen. With all of its possible options selected, a histogram is displayed, overly light and dark areas are highlighted so that exposure can be checked. The image can be enlarged to check focus, and it can be saved as a picture. Pressing the `OK` button or half depressing the shutter release button returns to the status or Live View screen so a correction can be made if necessary. To customise the `RAW/FX` button for digital preview:

- `MENU`
→ 📷 4
↓ `Button Customization`
- `OK` ↓ `RAW/Fx`
- `OK` `OK` ↓ `Digital Preview`
↓ - `OK` to tick all flags
- `OK` then repeated - `MENU` to exit