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REVIEWS - Medium Format - Mamiya ZD dSLR

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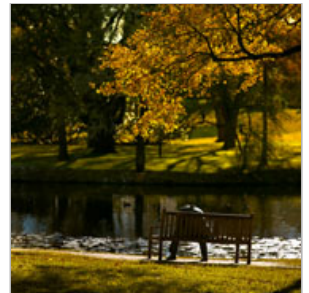
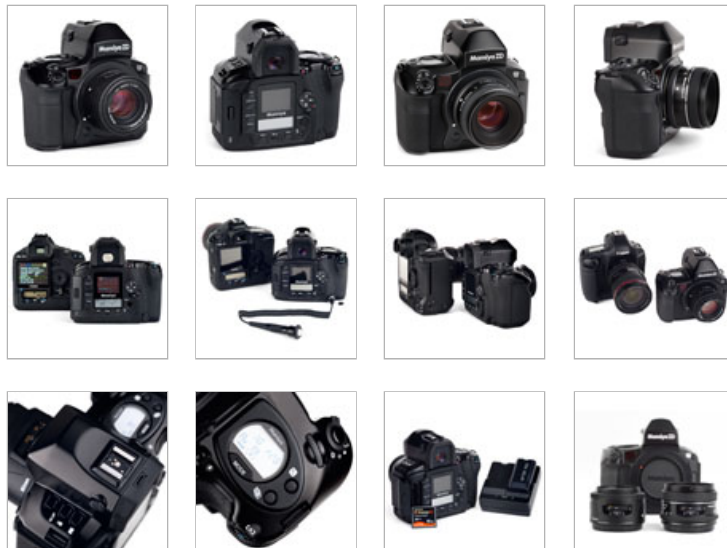
THE 22 MEGAPIXEL MEDIUM FORMAT dSLR

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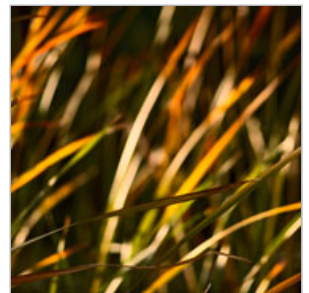
Updated March 11, 2017

OVERVIEW

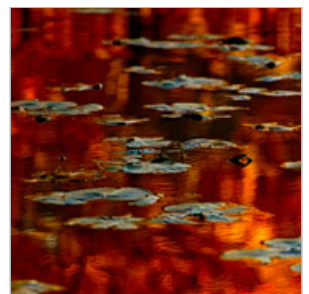
The Mamiya ZD camera was the first all-in-one digital medium format camera. Mamiya announced the Mamiya ZD dSLR in mid 2005 with first deliveries in late 2006 / early 2007. The Mamiya ZD was very expensive with an initial price tag of \$22,000. Mamiya never imported the ZD dSLR to the United States, so the camera never really went anywhere in North America. If shopping for a used Mamiya ZD, most likely it will come from Europe or Asia.



Mamiya 645AF 150mm F3.5
Mamiya ZD • F4.5 • 1/125 • ISO 50



Mamiya 645AF 150mm F3.5
Mamiya ZD • F3.5 • 1/90 • ISO 50



Mamiya 645AF 150mm F3.5
Mamiya ZD • F3.5 • 1/200 • ISO 50

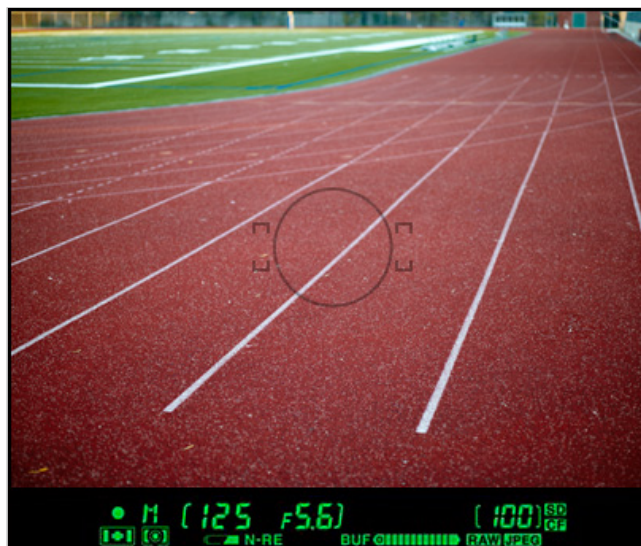
The Mamiya ZD was the first fully-integrated all-in-one medium format dSLR. Leica was second to market with their Leica S2, followed by Pentax with their 645D. The Mamiya still has the largest sensor (48mm x 36mm), thus is the closet to being considered a full-frame 645 medium format. On the downside, the Mamiya ZD was already out of date by the time it started shipping. Its small 1.8" rear LCD is generally considered the reason why MAC group (Mamiya's US distributor at the time) decided no to import the Mamiya ZD dSLR to the US. However, eventually MAC group did import the Mamiya ZD digital back.

BUILD QUALITY AND HANDLING

The Mamiya ZD is like an over-sized Canon 5D, but with a large 48x36mm Dalsa sensor at its heart. The grip is only slightly wider and deeper than the Canon 1Ds

Mark III's. The ZD is thicker than a Canon 1-series, but not quite as tall. The total volume is probably similar - just pushed and squeezed in a different shape. The build quality is very nice and camera is very nice to use. The fit and finish feel better than the Mamiya 645AFD II.

The Mamiya ZD's optical viewfinder has 98% coverage and there are no crop lines to worry about (like there are with the Mamiya 645AFD II). Basically what you see in the viewfinder is what you get. While not easy to find anymore, interchangeable focus screens were available for the Mamiya ZD - a grid screen and split / microprism screen. The picture below is a reproduction of the ZD's viewfinder and illustrates the data presented -



Mamiya ZD dSLR Viewfinder

The rubber grip is the same type as the 645AFD II's. The ZD uses slightly larger plastic buttons which are an improvement over the 645AFD II's small rubber buttons. The front and rear control dials are the same and so are the power switch and focus mode selector. The focus mode selector is poorly located (on both the 645AFD II and ZD) and poorly designed. The switch is difficult to move and it does not stop cleanly at each mode. It is difficult to change from auto-focus to manual focus unless looking directly at the switch. The newer Mamiya lenses have can toggle AF / MF via a ring on the lens, and that is a much easier way to toggle focus modes.

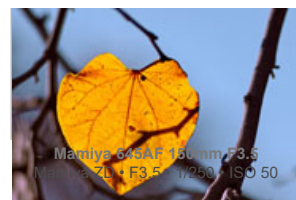
The door for the compact flash and SD cards is difficult to open. There is a spring action lever and the door has to be slid forward. Opening the door requires two hands. Another poor choice is the jack for the remote shutter release. It has a rubber cover to protect it when not in use. The rubber cover simply pops off - there is nothing keeping it tethered to the camera.

Overall the Mamiya ZD feels like a real camera that is purpose built. There are no frills. It covers the basics with the traditional PASM modes, the standard spot-center-matrix metering modes, a timer, MLU, bulb mode, a hot shoe, X-sync port, shutter release port, etc. In many ways the Mamiya ZD is comparable to the original Canon 5D in terms of features. When considering the Mamiya ZD's build quality and layout, one should keep in mind this camera was designed circa 2004 and the layout may seem dated by today's standards.

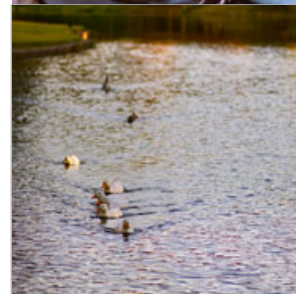
THE ALL-IN-ONE DESIGN

Unlike other medium format systems, the Mamiya ZD dSLR is an all-one camera with the "digital back" portion built-in. Depending on your preferences, there are some advantages to an integrated design:

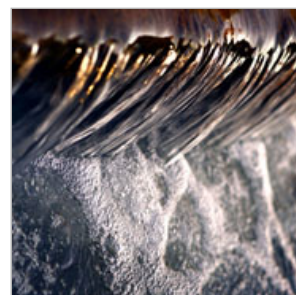
- The ZD camera uses ONE battery, and it is a rechargeable lithium ion battery similar to those found in current Canon and Nikon dSLRs. One battery means I do not have to carry spare batteries & charger for the digital back, plus another set of spare batteries (and charger) for the camera. The ZD comes with a nice, compact dual charger (world voltage).
- The ZD camera is smaller and lighter than the other medium format options. The Mamiya 645AFD II weighs ~3 pounds with its 6 AAA batteries, plus another



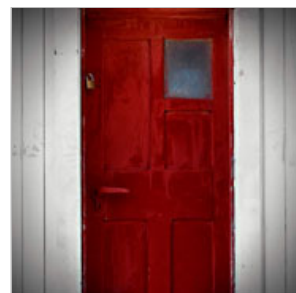
Mamiya 645AF 380mm F3.5
Mamiya ZD • F3.5 • 1/250 • ISO 50



Mamiya 645AF 150mm F3.5
Mamiya ZD • F3.5 • 1/180 • ISO 50



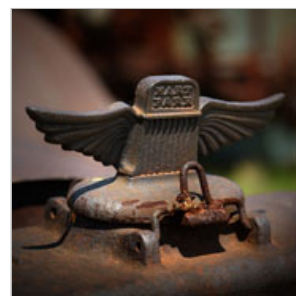
Mamiya 645AF 80mm F2.8
Mamiya ZD • F2.8 • 1/100 • ISO 50



Mamiya 645AF 80mm F2.8 D
Mamiya ZD • F4.5 • 1/200 • ISO 50



Mamiya 645AF 80mm F2.8 D
Mamiya ZD • F4 • 1/290 • ISO 50



Mamiya 645AF 80mm F2.8 D
Mamiya ZD • F4.5 • 1/250 • ISO 50

pound for the Phase One P25, plus its battery, plus the 80mm F2.8 AF kit lens. The kit weighs 5+ pounds. Whereas the Mamiya ZD weighs 2.87 pounds, the battery weighs 3.5 ounces and the 80mm lens weighs 10.6 ounces. In total 3.75 pounds. The ZD is not a petite camera, but compared to its medium format competitors - the ZD is the lightweight of the bunch.

- The ZD camera (and back) use the same Dalsa 22 MP sensor as the Aptus-22 and Sinar Emotion-22. The Dalsa sensor has a reputation for less sensor cast than the Kodak 22 MP sensor. After experiencing moderate sensor cast with the Phase One P25, I was worried that the ZD may have similar performance. Amazingly the ZD has not shown any signs of sensor or lens cast.
- The ZD's auto-focus consists of three auto-focus points - which are very close together. With the ZD's thumb pad, any of these three points can be selected INDEPENDENTLY, or all three can be selected at once for a wide focus array. Selecting the AF point is just like using thumb-stick on a Canon dSLR or the thumb pad on a Nikon dSLR.
- The ZD viewfinder has .75x magnification with 98% coverage, so no more sloppy overlay masks with crop lines. What I see in the viewfinder is what I get. The ZD's status bar in the viewfinder is very similar to a modern dSLR showing focus point selection, focus confirmation, metering mode, shutter speed, aperture, EC adjustment, ISO, buffer status and other info.

AUTO FOCUS PERFORMANCE

The auto-focus system in the Mamiya ZD dSLR feels similar to the Mamiya 645AFD II's both in terms of speed and sound. The auto-focus works fine for still subjects in reasonably good light. Focus can be surprisingly accurate - especially when set to spot mode. The focus mode can easily be changed from spot (uses just the single center AF point), to wide (uses all three AF points), to right to left via the rear thumb pad. I tend to leave the ZD in "spot" mode. Having the option to switch to the right or left point is nice, but in practice the three points are so close together that I do not see any reason to select them.

Like the older Nikon and Pentax cameras, the auto focus motor is in the ZD camera body. There is no motor in the Mamiya lenses like the Canon USM lenses. As such, focus is slower and noisier. Overall the auto focus performance feels similar to a Canon 85L in terms of speed and likelihood of hunting. There is a continuous focus mode which worked surprisingly well tracking incoming jets landing at DFW airport.

BATTERY PERFORMANCE

On average battery life was 300 to 500 clicks per charge. Compared to using rechargeable six AA batteries in a 645AFD II and separate LiON batteries in the Phase One digital back, the single battery system in the Mamiya ZD is a great improvement. Nowadays the Mamiya replacement batteries are expensive and difficult to find, the following 3rd party batteries should also work (according to other user reports):

- Hitachi VM BLP13 or 13A Batteries
- JVC BN-V814 Battery
- Energizer ER-C610 Battery

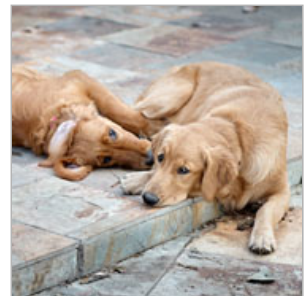
If considering a used Mamiya ZD purchase today, I suggest researching the batteries further and making sure new replacements can be sourced.



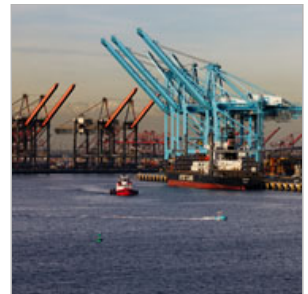
Mamiya 645AF 80mm F2.8
Mamiya ZD • F2.8 • 1/200 • ISO 50



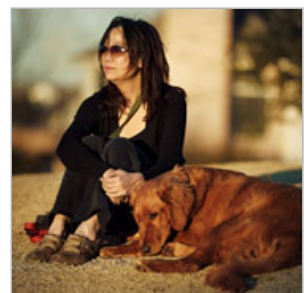
Mamiya 645AF 35mm F3.5
Mamiya ZD • F3.5 • 1/450 • ISO 50



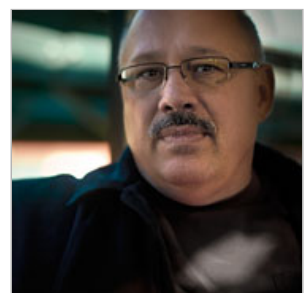
Mamiya 645AF 80mm F2.8
Mamiya ZD • F2.8 • 1/90 • ISO 50



Mamiya 645M 200mm F2.8 APO
Mamiya ZD dSLR • F5.6 • 1/250 • ISO 50



Mamiya 645M 200mm F2.8 APO
Mamiya ZD dSLR • F2.8 • 1/225 • ISO 50



Mamiya 645AF 80mm F2.8
Mamiya ZD dSLR • F2.8 • 1/180 • ISO 50

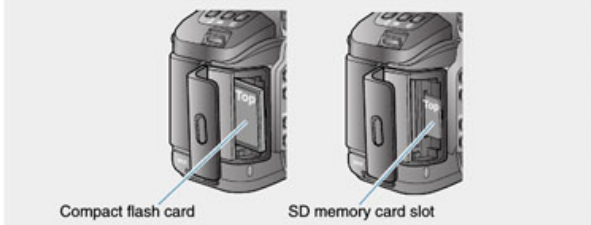
THE 1.8" LCD SCREEN

The rear 1.8" LCD is fine for setting camera parameters and custom functions, but the LCD is simply too small to be of benefit when reviewing images. Reviewing an image takes 3 to 4 seconds and is not worth the wait. Instead I just keep shooting. If there is a risk of missing focus, then I focus bracket. If I am not sure how much exposure compensation is needed, then I bracket exposure. It is easier and quicker to just shoot a couple extra frames versus getting frustrated with tiny rear LCD screen.

Fortunately the initial image review after a picture is taken is fairly quick. I have the screen set to the large histogram and it displays the histogram about 2 seconds after the picture is taken. On the downside, the ZD will NOT display the histogram of the first image if a second image is taken before the first image is finished writing to the CF card. If shooting one image at a time and checking the histogram after each image, then the pace is okay.

There is no denying that the rear LCD screen is the ZD's weakest specification, but if being fair, the Phase One LCD rear screen on the original P-Series and P+ Series digital backs sucked too. Nowadays one possible workaround might be a WiFi SDHC card that transmits the JPG to an iPhone or iPad. The Mamiya ZD supports SD cards (up to 2 GB), but not SDHC cards. In theory the WiFi SDHC card could be used via a SDHC Compact Flash adapter. I do not know if this will work since WiFi SDHC cards and iPads did not exist when I owned the Mamiya ZD.

Open the memory card slot cover of the camera and insert the memory card as shown below. Close the memory card slot cover.



Compact flash card SD memory card slot

You can select the quality of the images you capture. There are three image settings to choose from: RAW uncompressed, JPEG (three sizes available) and RAW+JPEG.

Quality	Description
RAW	Images are recorded in RAW (uncompressed) format.
RAW + JPEG	Images are recorded in RAW (uncompressed) and JPEG (compressed) format. For JPEG format, you can choose from 3 images sizes (L, M, S) and 3 compression rates (FINE, NORMAL, BASIC).
JPEG	Images are recorded in JPEG (compressed) format. For JPEG format, you can choose from 3 images sizes (L, M, S) and 3 compression rates (FINE, NORMAL, BASIC).

The Mamiya ZD writes to one memory card at a time. If RAW+JPEG is selected, the files will be written to one card. The Mamiya ZD will automatically default to whichever memory is loaded. If Compact Flash and SD cards are both inserted, the user selects which card to use. The Mamiya ZD support the SD cards (up to 2 GB), but NOT SDHC cards.

Excerpts copied/paraphrased from the Mamiya ZD user manual.

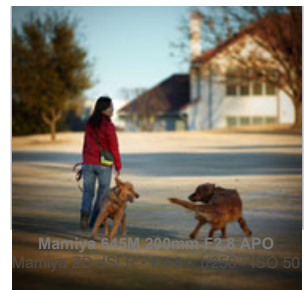
Excerpts from the Mamiya ZD User Manual

IMAGE BUFFER & SPEED OF OPERATION

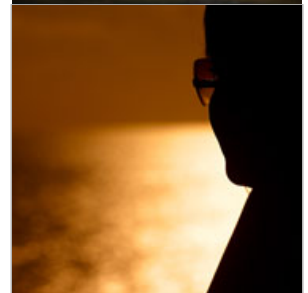
For all intents and purposes, the ZD's max ISO is 100. With ISO 100 and the slowish focus speeds, the ZD is not the right tool for action paced sports, chasing kids around, etc. It will be hard enough to get the picture in the first place, so filling the buffer is the least of the issues. On the other hand, if typically shooting a frame every 2 or 3 seconds, then ZD keeps pace just fine. Fortunately there is status bar in the viewfinder showing the amount of available buffer. And it works well. The last bits about the LCD and buffer were rather negative, so I would like add - shooting with the Mamiya ZD dSLR is a very pleasant experience. Treat it like a big Cadillac from the 50's on a Sunday drive, and it is a nice ride.

AUTO WHITE BALANCE (AWB)

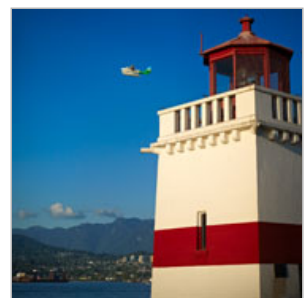
Most medium format digital backs use WB preset values rather than auto white balance, and then during post processing white balance is edited to taste. The Mamiya ZD does have AWB and it works well in outdoor light and under strobes. Overall the Mamiya ZD seems to be geared towards Provia film look. There is



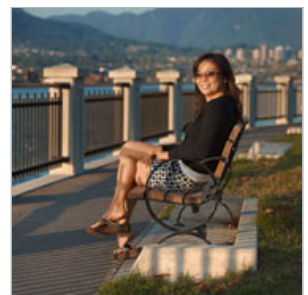
Mamiya 645M 200mm F2.8 APO
Mamiya ZD dSLR • F2.8 • 1/250 • ISO 50



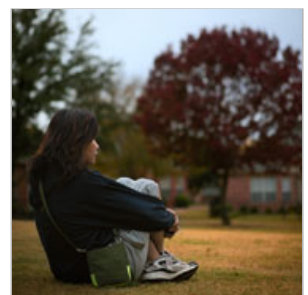
Mamiya 645M 200mm F2.8 APO
Mamiya ZD dSLR • F2.8 • 1/3200 • ISO 50



Mamiya 645AF 80mm F2.8 D
Mamiya ZD dSLR • F5.6 • 1/500 • ISO 50



Mamiya 645AF 80mm F2.8 D
Mamiya ZD dSLR • F4 • 1/225 • ISO 50



Mamiya 645AF 80mm F2.8
Mamiya ZD dSLR • F2.8 • 1/800 • ISO 100



Mamiya 645AF 80mm F2.8 D
Mamiya ZD dSLR • F3.2 • 4 Sec • ISO 50

certain muted, calm look to its coloring. The auto white balance and colors can be adjusted for more contrasty looks, but undoing that inherent Provia color film rendition is not always easy to do. Overall, white balance is no more complicated than the Leica M8, Leica M9, Leica S2 or Phase One P65+. All those cameras need to have their white balance tweaked in their respective RAW editor. The Mamiya ZD is no different.

SENSOR CAST AND MOIRE

Sensor cast is a big problem on the Phase One P25 - and all my files needed a LCC profile applied in Capture One. The Mamiya ZD has not exhibited sensor or lens cast. The Mamiya ZD files do exhibit moire and false color artifacts, but not nearly as much as the P25. The ZD and original Canon 1Ds are probably comparable when it comes to moire. Whereas the Phase One P25 is a moire magnet.

[Capture One](#) and [Adobe Lightroom](#) have come a long ways compared to 2008, so managing moire via the raw editor is easier today than before. The Mamiya ZD dSLR also has an optional YC301 Low Pass Filter (AA filter) to further reduce moire and color artifacts. This filter is not included with the camera and is an optional purchase.

IMAGE QUALITY - MAMIYA ZD VERSUS THE CANON 1DS MARK III

Assuming both cameras are shot at their base ISO, the Mamiya ZD produces a sharper image than the Canon 1Ds Mark III. Noise in the shadows is comparable provided the Mamiya ZD image is not under-exposed. The Mamiya ZD has an extra 2/3 of a stop of dynamic range in the highlights, but the Mamiya ZD rear LCD is so small that it is near impossible to tell if something is clipped or blown out when looking at the image review. The Mamiya ZD's histogram helps, but the histogram itself is pretty small as well.

The Mamiya ZD renders nice color, but overall the Canon 1Ds Mark III colors have more depth - like a glossy picture. The Mamiya ZD's color looks slightly muted and it does not exhibit the vibrancy found in the Canon 1Ds Mark III files. The Dalsa sensor has a base ISO of 25, but Mamiya upped the Mamiya ZD's base ISO to 50, so the Mamiya ZD's shadow noise can become evident if the deep / dark shadows are pushed more than a stop or two. Again, raw editors have come along ways in terms of shadow recovery and noise reduction, so file can be reasonably pushed, but do not expect [Sony A7rII](#) kind of results.

The Mamiya ZD files produce excellent black and white images. The camera's mix of good highlight retention and open shadows result in black and white images with nice highlight and shadow roll-offs. The highlights in particular have a very filmic character.

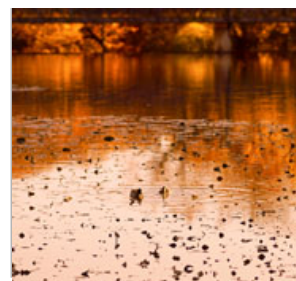
IMAGE QUALITY - FILE SHARPNESS

The Phase One P25 files are sharper the Mamiya ZD files, there is a clear difference in the 100% on-screen views. The Mamiya ZD's sharpness can keep pace if the sharpening is increased and selectively applied in separate layer (in the raw editor or Photoshop). The Mamiya ZD files are sharper than the Canon 1Ds Mark II and 1Ds Mark III files, so the ZD is sharper than a dSLR, but not quite as sharp as a Phase One P25. I prefer to apply a light amount of noise control in the raw editor with sharpening set to a minimum. Then later selectively sharpen the processed PSD image in Photoshop - with sharpening applied to only select areas. With this approach I feel the ZD's resulting file quality is very close to a P25.

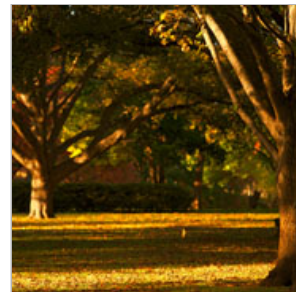
IMAGE QUALITY - SHADOW NOISE

At ISO 50 (the base ISO for both the Mamiya ZD and Phase One P25) the P25 files are extremely clean and the shadows can be boosted multiple stops with little noise penalty. Whereas the Mamiya ZD files can handle about 1 stop EC adjustment in post processing; anything past 1-stop may require additional noise reduction or some other type editing to mitigate the noise.

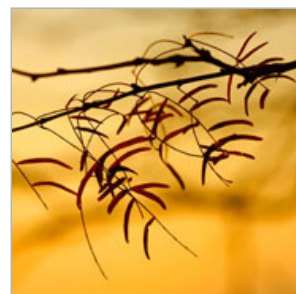
On the other hand, the Mamiya ZD holds highlights better than any camera I have used (as of ~2009). When shooting a landscape scene with the Phase One P25, I under-exposed by 1/3 to 2/3 EC to keep clouds from clipping. Whereas with the ZD, EC adjustment is seldom needed. The ZD mid-tones and shadows are fairly open, so usually I can reduce them slightly (with levels edits or curve edits in Photoshop) and hide shadow noise.



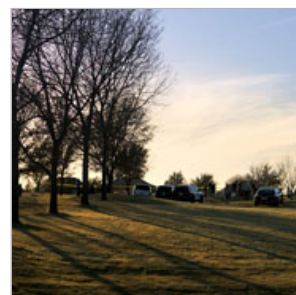
Mamiya 645AF, 150mm F3.5
Mamiya ZD dSLR • F3.5 • 1/400 • ISO 50



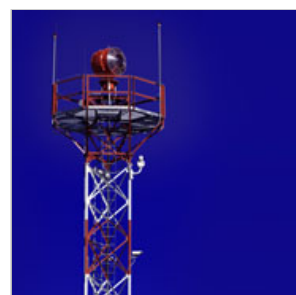
Mamiya 645AF 150mm F3.5
Mamiya ZD dSLR • F3.5 • 1/90 • ISO 50



Mamiya 645M 200mm F2.8 APO
Mamiya ZD dSLR • F2.8 • 1/450 • ISO 50



Hasselblad 110mm F2 Planar FE
Mamiya ZD dSLR • F4 • 1/800 • ISO 50



Mamiya 645AF 150mm F3.5
Mamiya ZD dSLR • F8 • 1/290 • ISO 50



Mamiya 645AF 150mm F3.5
Mamiya ZD dSLR • F5 • 1/180 • ISO 50

The Mamiya ZD has a maximum ISO of 400, but the quality is poor. The Mamiya ZD is best left at ISO 50 with ISO 100 & 200 used only as needed. ISO 400 might be more usable with improved RAW editor capabilities, but do not get your expectations too high.

IMAGE QUALITY - LONG EXPOSURES

The Mamiya ZD can deliver clean exposures up to 3-4 second long, but as the sensor heats up, noise becomes increasingly problematic. Four or five seconds is probably the Mamiya ZD's maximum exposure. With noise reduction enabled, the ZD takes a black frame exposure after each image. The ZD must complete that 2nd exposure before it can shoot the next frame. In post, hot pixel noise reduction is key (Capture One has this feature). Generally, with the hot pixel noise suppression and some light color and luminosity noise reduction, the Mamiya ZD does an okay job with exposures up to ~4 seconds. Eliminating the hot pixels is about 90% of the noise. For amusement I tried 8 to 15 seconds and the noise levels were excessive.

CONCLUSION

The Mamiya ZD dSLR was a camera I always wanted to own. In late 2008 I purchased a used Mamiya ZD dSLR and used it for about a year. Looking back across all the digital medium systems I have owned, I consider the Mamiya ZD as the most enjoyable experience. I found the camera to be a very capable and consistent performer. Being of 2005 / 2006 vintage, the camera has its limitations compared to today's cameras, but the Mamiya ZD is still capable of producing stunning images. And the Mamiya ZD MEF files are fully supported by Phase One's Capture One software.

Mamiya does not get much recognition for creating the first all-in-one digital medium format camera. Today the Leica S2 and the Pentax 645D get the glory. From time to time I search Ebay for used Mamiya ZD dSLRs sell for around ~\$2500 USD. That might sound expensive compared to the Nikon D810 or Sony A7RII, but I have some rose-colored-glasses nostalgia and think \$2500 is a bargain for digital medium format. The Mamiya ZD files are fully supported in Phase One's Capture One (C1) software including LCC and lens corrections. Also, Phase One has improved their noise reduction with hot pixel suppression - which is something the Mamiya ZD definitely needs when shooting above ISO 100 and / or when shooting exposures longer than 1/30th. For somebody looking for the cheap-thrill of digital medium format, the ZD dSLR is a bargain.

Would I buy a Mamiya ZD dSLR again? Eh... The Mamiya ZD dSLR is sort of a one-trick-pony because it does not do well above ISO 100. So it needs a lot of light, and if traveling, that means a second camera system is a must-have for the high ISO work, telephoto shots (ie - longer than 200mm) and for those times when a 645 camera is too big and bulky. If Phase One resurrected the Mamiya ZD dSLR with an updated sensor and modern rear LCD, I would probably be on the waiting list. The Leica S does offer a modern experience, but its smaller sensor (45mm x 30mm) falls short of the traditional 645 look. If there is one thing I love about the Phase One P65+, it is the 54x43mm large sensor and that look that comes from a larger sensor (negative).



 Hasselblad X1D-50c 4116 Edition Medium For... \$9,895.00	 Hasselblad X1D-50c Medium Format Mirrorles... \$6,495.00	 Leica S (Typ 007) Medium Format DSLR Camer... \$19,995.00
 Leica SL (Typ 601) Mirrorless Digital Came... \$5,995.00	 Pentax 645Z Medium Format DSLR Camera (Bod... \$5,496.95	 Sony Alpha a7R II Mirrorless Digital Camer... \$3,246.00

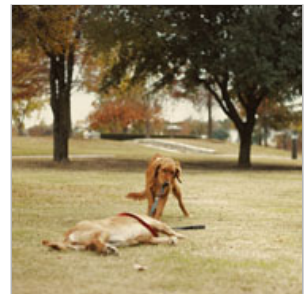
The Mamiya ZD dSLR was the "fun" camera that always worked. Looking at these pictures I can't help but be impressed with the Mamiya ZD. It has a great film look and captured the moment. I cannot go back in time re-live or redo those moments,



Mamiya 645AF 150mm F3.5
Mamiya ZD dSLR • F4.5 • 1/900 • ISO 50



Mamiya 645AF 80mm F2.8
Mamiya ZD dSLR • F4 • 1/160 • ISO 100



Mamiya 645AF 80mm F2.8
Mamiya ZD dSLR • F2.8 • 1/468 • ISO 100



Mamiya 645AF 80mm F2.8
Mamiya ZD dSLR • F4 • 1/450 • ISO 50

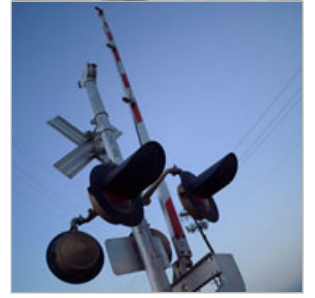


Mamiya 645AF 80mm F2.8 D
Mamiya ZD dSLR • F5 • 1/640 • ISO 50

so I'm happy that the Mamiya ZD worked brilliantly on these given days. Time marches on and the ZD is certainly dated camera nowadays, but if wanting to "experiment" with digital medium format, the Mamiya ZD is a cheap ticket.



Mamiya 645AF 80mm F2.8 D
Mamiya ZD dSLR • F5.6 • 1/1000 • ISO 50



Mamiya 645AF 35mm F3.5
Mamiya ZD dSLR • F3.5 • 1/80 • ISO 100