



The moon during an eclipse

Stars and Star-trails with your Panasonic FZ camera

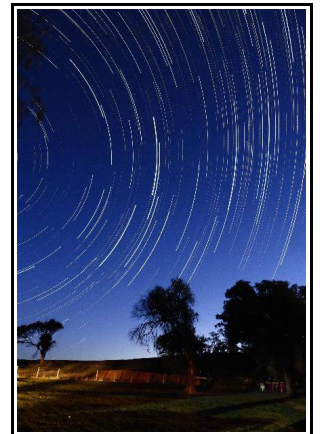
The topic of 'Stars – Star Trails and the Milky Way' come up from time to time amongst all keen photographers, and while many have tried it previously, there is always some new starters. These notes are designed to assist them.

Most magazine articles discussing photographing the stars or the Milky Way always refer to “your dSLR” and never to superzoom / bridge cameras – as though it is not possible for our FZs and similar cameras to record such images. However, with a small amount of effort and care, we can create wonderful star trail images.

Most images of the sky are wide-angle images taken with whatever lens you have that has a short focal length. With a G-series mirrorless camera it could be the 14-42mm 'standard' lens, or a specific wide-angle lens anywhere from 10mm to 20mm. With your FZ superzoom / bridge camera, it will be whatever focal length is “1x zoom”.

Star Trails- ... follow the traditional film-camera 'long exposure – record star movement' style of photo, except that with digital cameras and processing, today we take large numbers of short-exposure time images and “stack” them via software.

This image is constructed from 400 camera images of 8 seconds each, overall creating a long-exposure of approx 100-minutes. The camera lens was at 1x zoom



About the author:-

G'day a good Aussie greeting to friends

My photographic history / career started as a 10 yr old being given my first camera - a 120-roll film job. Then in the 1960s I went to 35mm & had several of them before going to a Pentax in the mid-60s, then through the 70s & 80s I expanded to four lenses and a second camera body. The lenses covered the range from 24mm to 1000mm

In 1975 I was invited to join the teaching staff at the Canberra [Australia] Adult Education college, offering several Photographic Techniques modules which I did part-time for many years and later full-time once I retired from my career in engineering and as an I.T. specialist. In 2006 I retired from college activities and took a modified college course to outback Australia, whereby we were offering up to 24 weekend workshops annually to small outback communities, cattle stations, sheep farms etc. Our motorhome accumulated over 400,000km over 15 years!

In 2015 we ceased this activity as my spouse wanted to spend more time by ourselves. We now tour Australia as 'photographic-tourists', spending between 250-300 days each year as travellers

In 2003 I went Digital with my first Fuji superzoom camera. I graduated to a Panasonic FZ-30 which was used for magazine work, then the Fuji was replaced with a Panasonic FZ-200. The FZ-30 was replaced by the Panasonic G2 plus several lenses, and it has now been replaced by the FZ-2500

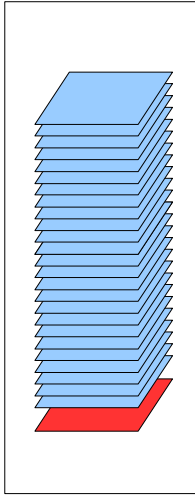
Readers wishing to know more can email me if they wish

Regards and all the best in your photography,

Phil Jones

These pages are set up for printing if you wish. I trust that you'll find these notes useful, and queries or suggestions are welcome. Unless otherwise acknowledged, all images shown within this document were created by the author and are copyrighted.

How is it done? ... how can you create 1 hour to 3 hour long exposures...



when your digital camera does not take photos for longer than maybe 5-minutes even if it has a “B” setting?

This has led to digital photographers searching for other methods for taking star-trails.

One enterprising astro-photographer and computer programmer in Germany [Mr Achim Schaller whose web site is “www.startrails.de”] has developed a program for doing just this, and he has made this program freely & publicly available. It is called “startrails.exe”; it is released as a zip file so that you can download it easily and activate it via a couple of mouse clicks. The program is pretty smart and a delight to use. It stacks lots of images on top of each other, and in doing so, it makes each image (called a layer) to become transparent so that the bright star movement now becomes visible over the darker background of the original image loaded at the bottom of the stack.

In my star-trails photos, I have combined from 50 camera-images to 1000 camera-images ... depending upon the exposure times. (shorter exposure times means more camera-images over the total exposure time itself). On my pretty-ordinary laptop computer, stacking of 350 exposures takes around 10 minutes.

The author has used the above software for over a decade, and finds it very easy to use. He has also chatted via email with the Mr Schaller and exchanged images of star trails photography from Australia. It should be noted here that the above software is one of several available across the internet.

Equipment needed – one you already have, the others will certainly help!



Plus



plus

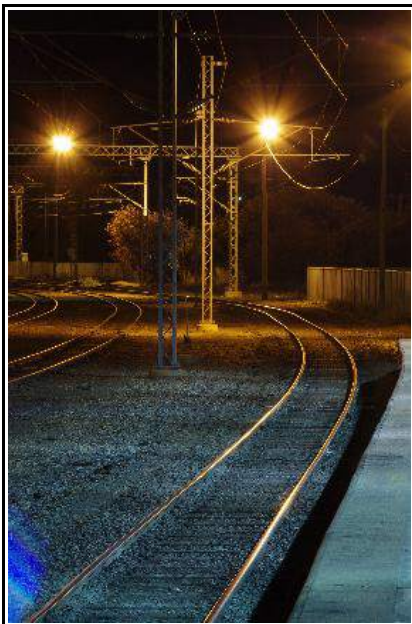


**Your FZ camera ~
can be any recent model**

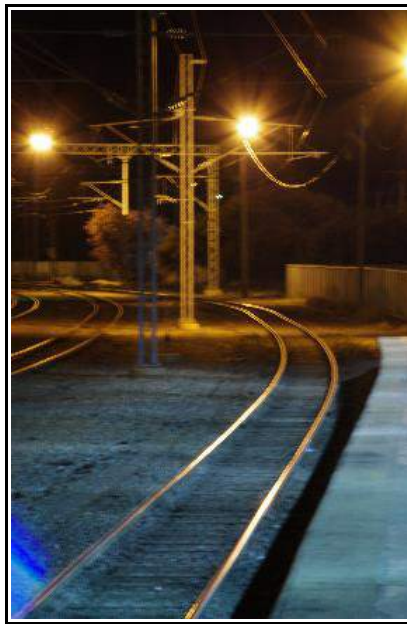
**It is important that your tripod be a
good one, -not- a chain-store cheapie
that may wobble in any breeze**

**the remote can either be a Panasonic
or 3rd-party item, so long as it is
“Panasonic compatible”**

The tripod head can be either a “ball head” or a “pan and tilt head” ~ it matters not. The important bit is that the tripod legs and joint connections be well made and tightened securely so that wind vibration during the long exposure does not cause tiny amounts of ‘wobble’ causing the entire image to become fuzzy.



This is what you want from your tripod



and this is what you DO NOT want

Locating the Celestial Pole:-

When the Celestial Pole is within the picture frame, you will create a circle from the stars as the earth rotates at night.

For southern hemisphere people, locate the Southern Cross in the overhead sky and angle the camera towards the Southern Cross and its pointers ... its location and position above the horizon alters with the seasons and the time of night;
For northern hemisphere people locate the North Star, known as Polaris, part of a series of stars called the Big Dipper.
Wherever you are, if in doubt, use Google to give you more information.

Technique:-

First off is to shoot a test image to make sure focus and location is okay – then to reset the camera for continuous operation for the actual star trail images.

a) shoot the test image ...

- set camera to “M” Manual mode;
- set ISO to 800 or 1600;
- set shutter to 30 seconds,
- set aperture to maximum, (usually F2,8);
- set zoom lens to maximum wide-angle (ie: 1x zoom), then
- set self-timer if not using a remote control,
- set focus mode to MF;
- and take your test image.

Once you are happy that the camera is producing a 'good' image,

b) start shooting your star images ...

- **for FZ-200, 300/ 330** alter shutter speed to 10-seconds -or-
- **for FZ-1000, 2000 / 2500** use menu to cancel NR settings **then** set shutter 30 to 60 seconds;
- set exposures from 'single' to 'continuous low speed';
- leave all other settings as-is from test above;
- press the remote control and lock it into the 'continuous' position.

Listen for a moment or so for the 'click-clunk' change-over from first image to the second and the second to the third, and when you're confident that all's well, go somewhere warm for the next half-hour or so ~ but don't get too comfortable just yet

c) when do you need to return to the camera?

Older models of FZ cameras will shoot up to 100 images before stopping. For these users we need to do a tiny bit of planning! 10-seconds exposure then 10-seconds of Noise Reduction gives 1/3-minute. 100 exposures at 1/3-minute each comes out at about 33 minutes total. You need to return to the camera about the 30 to 33 minute mark, cancel the remote control device, then immediately restart exposures for another 30 minutes. Not 'perfect' but it becomes more convenient as you get more experience.

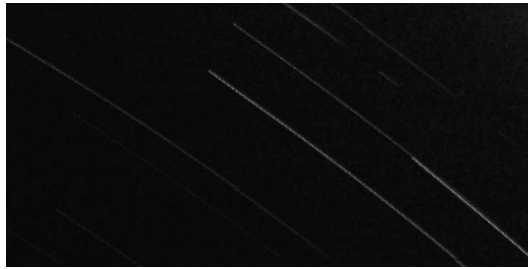
Newer models of FZ camera ... ie: the FZ-80/82; the -300/330, the -1000, -2000/2500 will continue shooting until the memory card is full.

However – all users will need to return from time-to-time to make sure that the camera has not stopped for some reason, or to check that the camera is still dry (moisture from atmospheric dew falling from the sky or other sources).

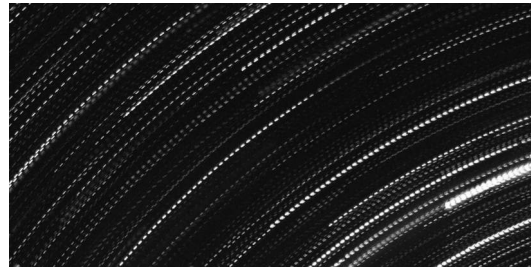
Every camera will stop when the battery runs flat.

What is the 'best' exposure time when also using NR (Noise Reduction) settings?

Is a bit a 'dance' ... too short an exposure does not expose faint stars, whereas too long an exposure causes long breaks between each image.



2-second exposures



60 second exposures

From much experience, the author uses:-

- 10-second exposures in Panny cameras when he **cannot cancel the NR settings**, and
- 60 seconds in those Panny cameras where he **can cancel NR via a menu option**.

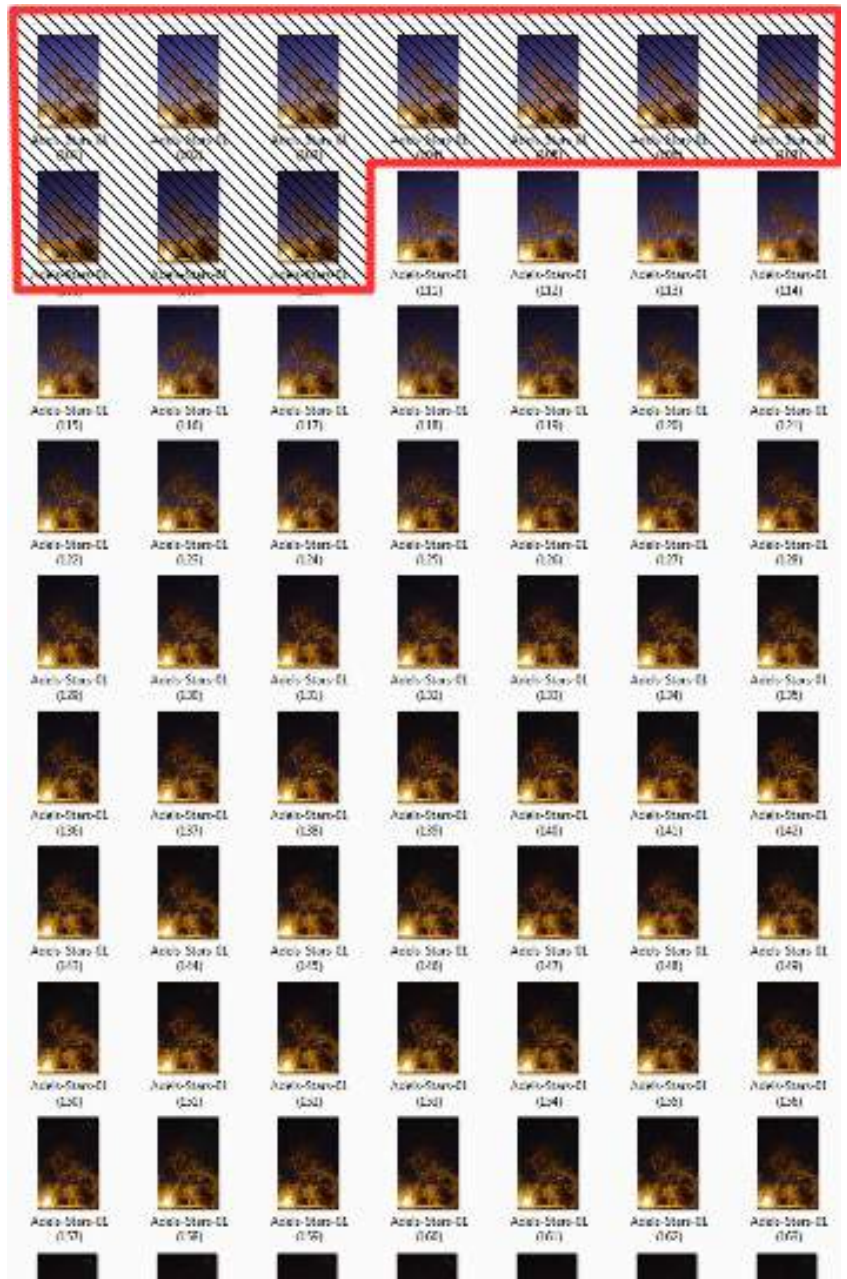
What time of night should one start your star trails?

[in most of Australia] if you commence your photography 15 to 30 minutes after sunset, there is still enough light in the sky to provide a pleasant backdrop for the resulting star trails. If there is too much light in your early images, just remove them from the collection before you stack them later via software.

Here is a collection of star-trail images, with the first 10 images discarded from the composite because the sky was too bright.

The remaining 115 images were selected to become the final composite image.

The final image is displayed on the next page.



Samples of Star Trails taken with Panasonic cameras



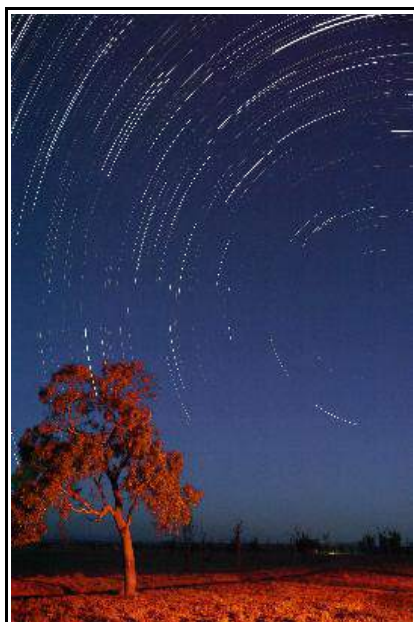
Image from previous page.



200 images of 30 secs



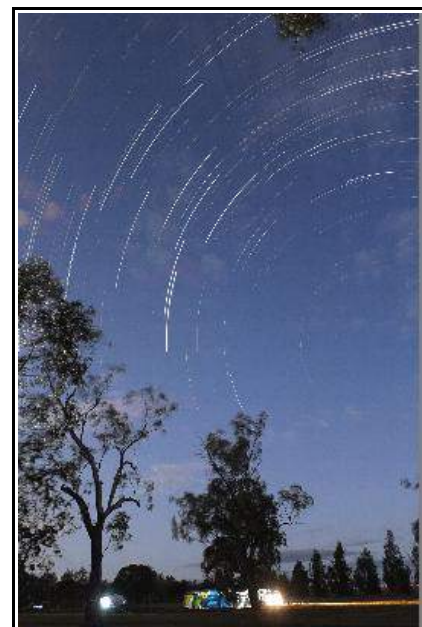
550 images of 8 seconds
car headlights are in the photo.



Foreground lit by farm outdoor lights



unknown number of images



300 images of 8-seconds



36 images of 30 seconds, lit by the full moon



12 images of 30 seconds, lit by the full moon

NB: some pixellation will be visible above following image downsizing to fit the pages.