

# An Easy Build Samsung NX1000/NX1100 Twin Rig - Part 1

By Ray Moxom

Those at the November 2016 Sydney Stereo Camera Club meeting would have seen the Samsung NX1000 twin rig that I put together using second hand cameras purchased on eBay and ‘off-the-shelf’ parts.



Fig 1

There has been considerable discussion on the 3,000 plus membership Photo-3D email discussion group about twinning Samsung NX1000 cameras and George Themelis (Dr T) has provided valuable information to both the Photo-3D group and to me personally.

These APS-C size sensor interchangeable lens cameras have 20 MB sensors that are the same physical size as the sensors in most SLRs. The cameras can produce high quality images even with higher ISO settings. Like the better SLRs the camera can be operated in many modes including full manual.

With Samsung stopping production of cameras in 2016 these cameras are now available second hand on eBay at a fraction of their original price.

Due to the offset lens and a collar between the lens and the camera's lens mount, these cameras can be coupled together using a twin ring mount, available from Digi-Dat in Germany, which gives a lens separation of 72 mm, which is closer even than the Fuji W3s 75 mm lens separation.

This closer lens separation is a big advantage when compared with other large sensor cameras.

The Samsung NX1000 and NX1100 are physically and functionally identical. The Samsung NX1000 was released in 2012 and the NX1100 in 2013. The only differences that I am aware of between the two cameras is that the NX1100 was bundled with PhotoShop Lightroom software. However, if you intend to build a similar twin-rig, it is recommended that you obtain either two NX1000s or two NX1100s. There may well be internal component differences that would result in less than ideal sync if you coupled an NX1000 with an NX1100. For the remainder of this article I will just refer to the Samsung NX1000.

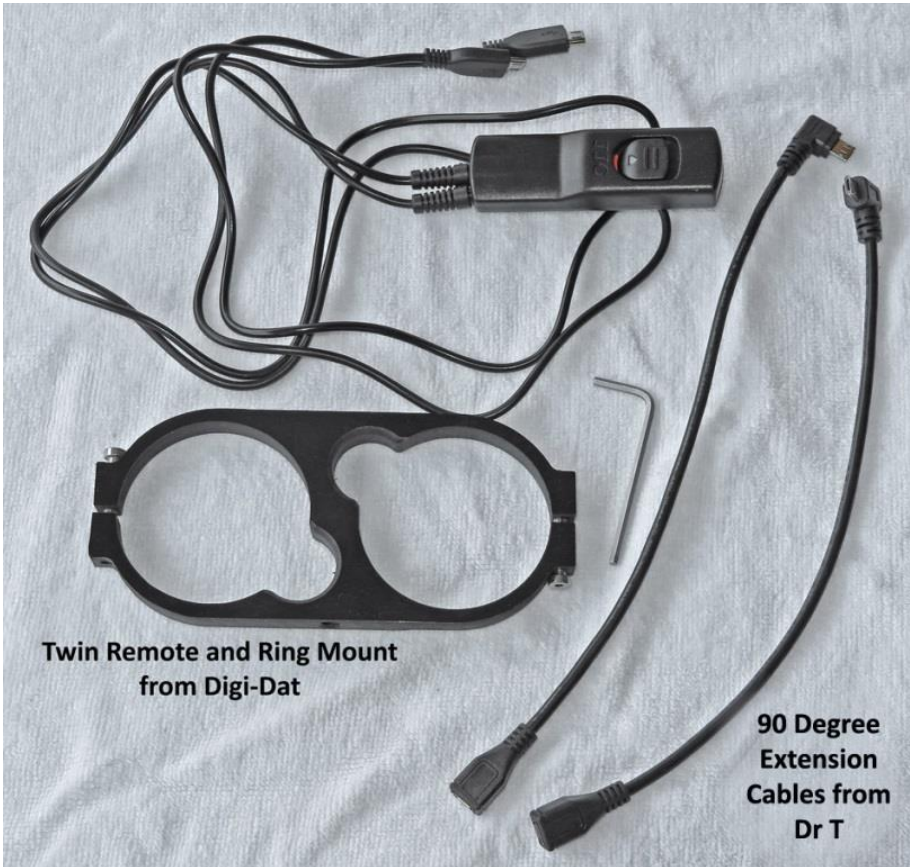


Fig 2

Synchronising cables for Samsung NX1000 cameras plug into the camera's micro USB port. They are not standard micro USB cables as they have built in resistors that are necessary for firing these cameras.

There are two basic way of synchronising a pair of Samsung NX1000 cameras with ‘off-the-shelf’ parts. These are:

1. A custom made double ended micro USB cable with 90 degree left and right oriented micro USB connections (Fig 3). This will allow the cameras to be fired from either the left or right camera shutter button. The cable incorporates the necessary built in resistors.
2. A custom made twin remote cable as shown in Fig 2. Resistors are built into the micro USB connectors.



Fig 3

The double ended cable is a neater and more elegant way of coupling the cameras. However, the twin remote method has advantages when shooting with a tripod, such as night photography.

In its simplest form, all you need to put together a Samsung NX1000 twin rig is a pair of cameras, a twin camera ring mount and either the double ended cable (Fig 3) or the twin remote (Fig 2).

Both Nancy and my twin rigs synchronise well. They sync with a manual flash at 1/125th sec, which is a good test for camera sync.

The small hot shoe flash supplied with the camera (which gets its power from the camera battery) is not suitable for twin camera flash and the cameras do not sync when the supplied kit flash is used.

So, how much will it cost and where do you get all the bits and pieces?



Fig 4

**The Cameras** that I purchased on eBay came from the UK, where a large number are listed. Another club member managed to buy a pair of cameras locally. In the eBay search box just type “Samsung NX1000” and click the ‘Worldwide’ box. The average price that I paid was \$209 AUD. The cameras come in three colours – black, white and pink.

**The Ring Mount** (which holds both camera bodies by their lens mount) is available from Digi-Dat (Werner Bloos) in Germany. The price of the Ring Mount is EUR 80. Shipping cost is EUR 6.50 per order of ring mount and cables. Payment can be made by PayPal. Email for Werner Bloos is: [info@digi-dat.de](mailto:info@digi-dat.de)

**The Double Ended Micro USB Cable** from Digi-Dat, is EUR 25

**The Twin Remote** also from Digi-Dat, is EUR 35

**The 90 Degree Extension Cables** (for use with the twin remote) are available from George Themelis (Dr T) who has them especially made with 4 wires to suit the NX1000 cameras. Cost is \$10 USD for a left and right pair of cables plus \$5 USD for postage. Payment can be made by PayPal. Email for George Themelis is: [gathemelis@gmail.com](mailto:gathemelis@gmail.com)



Fig 5

**Camera Handle** from eBay. I paid \$6.76 AUD including postage for the one in Fig 5 from eBay seller ‘rainbowonline2012’, but there are other option available on eBay including an aluminium handle from eBay seller ‘honestydeal11’. The Digi-Dat Ring mount has a tripod screw in its base. You really need a camera handle if you are using a twin remote rather than the double ended cable. Some of us will also prefer to use a handle with the double ended cable setup.

### **Putting it Together**

With all of these items the assembly process is very simple.

You attach the Ring Mount to a pair of cameras using the supplied instructions and the included alan key. Then connect the cables to the micro USB ports on each camera. The 90 degree extension cables are recommended if you are using the twin remote to reduce possible damage to the camera’s micro USB socket and to make the wiring neater. **That’s it!**

I put a bit of “CRC 2.26” on a lint free rag and wiped all of the connections before connecting the cables. CRC 2.26 improves electrical conductivity, seals out moisture, prevents corrosion and acts as a plastic friendly lubricant for electrical connections. More information at: [www.crcindustries.com.au](http://www.crcindustries.com.au)

Part 2 will include some recommended camera settings, making a DIY cable remote, using the cameras on a bar for wider lens separation and using the 50–200 mm lenses (Fig 4) that were initially sold in an optional twin lens package. Please feel free to contact me for further information.

# An Easy Build Samsung NX1000/NX1100 Twin Rig - Part 2

By Ray Moxom

In Part 1 in the January 2017 issue of 3D Window I discussed the simplicity of putting together a ‘standard lens separation’ Samsung NX1000 (or NX1100) twin rig with ‘off-the-shelf’ parts.

In this Part 2 article I will discuss some simple do-it-yourself (DIY) options for these cameras, including:- the closer 68mm lens separation Digi-Dat Ring Mount, making a Z-Bar as an alternative to using a Digi-Dat ring mount, using a mounting bar for wider based 3D, making your own twin remote, a direct coupled circuit diagram, some recommended camera settings and a few idiosyncrasy.

## 68mm Digi-Dat Ring Mount

In addition to the 72mm lens separation Ring Mount covered in Part 1, Digi-Dat also make a 68mm lens separation Ring Mount. To use this closer ring mount it is necessary to grind down the cable strap lugs on the short side of each camera. While this is something that I do not intend to do, it is an option for those who want the lens separation to be that little bit closer.

## Z-Bar (photo below)



Bob Aldridge from the UK gave me the details of how he made a simple Z-Bar for his Samsung NX1000 twin rig. So I took his idea and folded up a piece of aluminium bar that I had to make the Z-Bar in the above photo. As with the ring mount one camera is inverted. With the Z-Bar the cameras are attached to the bar via the tripod threads. Bob mentioned that the cameras can be mounted just as close as with the Ring mount if holes are drilled in the upright section of the bar to accommodate the protruding camera strap lugs. Multi holes or a slot will allow the lens separation to be adjusted. The bar that I used was 20mm x 3mm and cost \$6 for a 1m length from Bunnings. A 1m length would make three Z-Bars, so there is a bit to practice with if you make a mistake with the first one.

## Mounting Bar (photo below)



The cameras can be mounted on a simple bar, such as the 125mm lens separation bar above. The wider separation is ideal when you need to stand back from the scene, such as in the photo below. Also note the good camera sync in this photo which has been cropped down from the original to show more detail of the fast moving water.



The Samsung NX1000's large image size allows for plenty of cropping while still retaining good image quality.

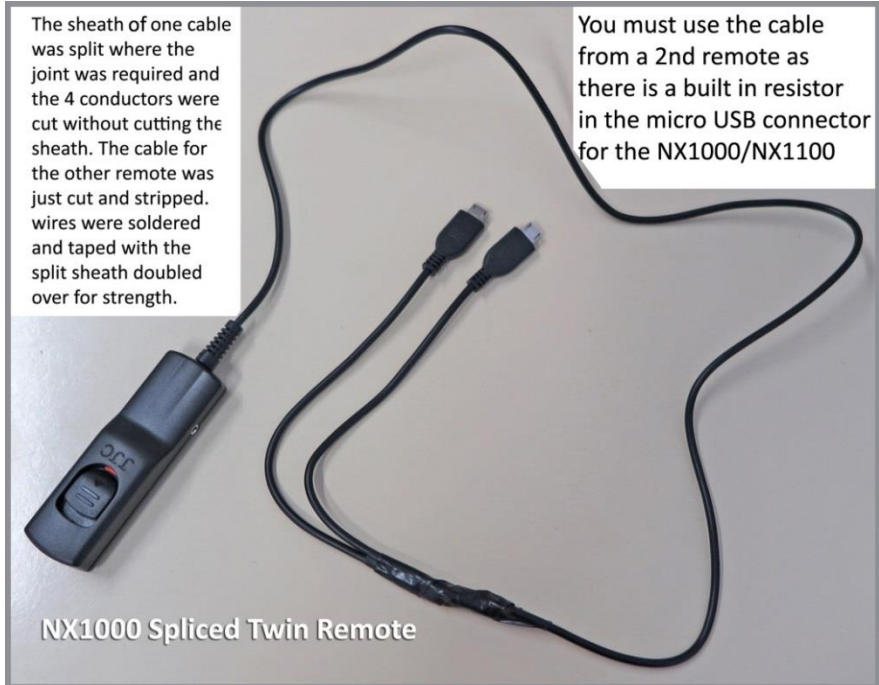
While flat commercial bars suitable for twin cameras are readily available, I prefer a bar with a small lip at the back to allow quick and accurate alignment of the cameras.

"Metal Mate" aluminium bar is sold as 1m or longer pre-cut lengths. I used the 40mm x 3mm x 1m flat bar and the 40mm x 12mm x 1.6mm x 1m angle bar to make a bar with a lip by putting the flat bar inside the angle bar, cutting off the required length and then drilling and tapping  $\frac{1}{4}$  inch threaded holes. Bunnings Hardware stock the flat bar, but you may need to pre order the unequal angle bar.

$\frac{1}{4}$  inch thumb screws to hold the cameras by their tripod threads are available online for about \$1 each including postage. I got mine from eBay seller "bitb99".

## Making a Twin Remote

If you prefer to DIY and can use a soldering iron, a lower cost alternative to the off-the-shelf twin remote that I mentioned in Part 1 is to buy two low cost Samsung NX1000 cable remotes and make your own twin remote as shown below. Cost of the single remotes are about \$9 AUD each with free postage. One eBay seller of these remotes is “made-in-china1949”.



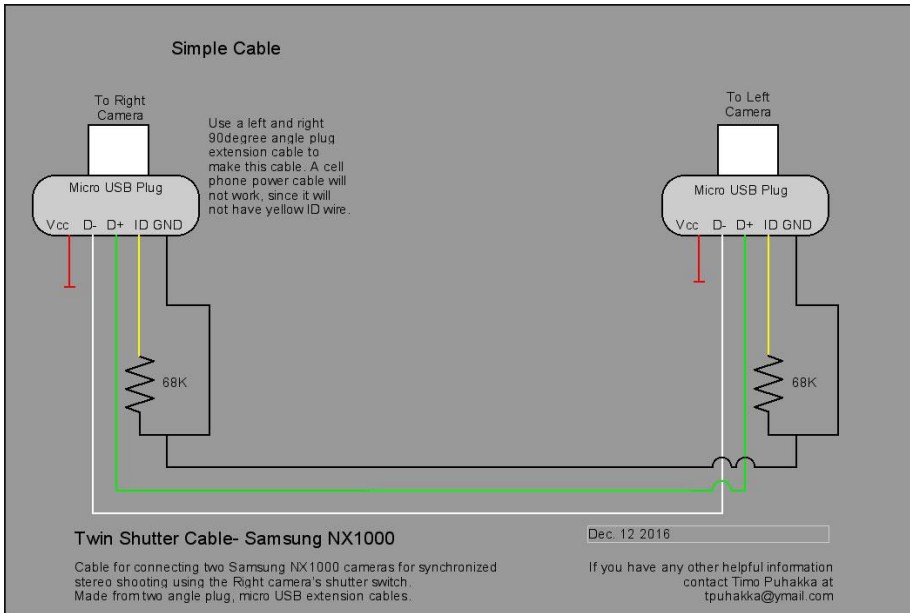
A twin remote was used to take the following photo using a tripod. The exposure was 3 seconds at f8 and the lens separation was 72mm using the Digi-Dat Ring Mount described in Part 1.





## Direct Coupled Circuit Diagram

Timo Puhakka from Canada has kindly provide a number of remote and direct coupled cable diagrams to the Photo-3D Yahoo Group and has given his permission for us to reproduce his schematics. Below is the circuit diagram for the direct coupled cable which allows two cameras to be directly coupled and operated via the shutter release button on either camera. This is an alternative to the off-the-shelf cable available from Digi-Dat.



You can either search the Photo-3D archives or just contact me if you want copies of Timo's other schematics.

## Recommended Camera Settings

Following are some initial settings for the Samsung NX1000 cameras. These are just suggestions that you can modify as you get more familiar with these cameras. It is important to make sure that both cameras are set up the same.

**Mode Dial:** Set to P (Program) for general photography, A (Aperture Priority) for action photography, M (Manual) for night photography and M also for flash photography in low light.

### Menu Items - Shooting Mode 1:

Photo Size: Always set to maximum resolution of 20 MP.

Photo Quality: Always set to either SF (super Fine) or to SF+RAW if you are happy to get involved with RAW file processing.

ISO: set to either 100 or 200 for general photography and to 400 for action photography on a sunny day.

White Balance: Set to daylight for most purposes. Do not use AWB as it may result in a mismatch of colours between cameras.

Picture Wizard: set to off (or set to Vivid for brighter colours).

Selective Colour: set to off.

### Menu Items - Shooting Mode 2:

AF Mode: Set to SAF.

AF Area: Set to Multi AF.

MF Assist: Setting is optional.

Framing Mode: Set to On - this retains a bright screen in low light.

### Menu Items - Shooting Mode 3:

Drive: Set to Single.

Bracket Set: Do not set.

Meter Set: Set to Multi.

Smart Range: Set to Off.

Colour Space: Set to sRGB.

### Menu Items - Tools Mode 1, 2 & 3 (selected items only):

Quick View: Set to 5 sec.

Auto Display Off: Set to 1 min.

Power Save: Set to 10 min.

Sensor Cleaning: Set to on so that the cleaning occurs on start up. It is important that the camera be in the upright position when switching on— see below under Tips and Idiosyncrasy.

### Menu Items - Playback Mode 2:

Auto Rotate: Set to Off.

Function (Fn) Button: This is the fastest and best way to change many settings while shooting. Examples include: setting ISO, adjusting light value compensation and setting shutter speed and aperture in Manual mode.

For shooting in locations where there is a lot of white water, such as kayaking or surfing events, use the 'Fn' button to set the light value compensation to -1/3 or -2/3.

## Tips and Idiosyncrasy

George Themelis from the USA, Timo Puhakka from Canada and Werner Bloos from Germany have shared tips and other information relating to Samsung NX1000 twin rigs and most of the following is from these three experts with extra comments from my own observations.

Switch one camera on first and only switch on the second camera after the screen of the first camera lights up. This will reduce misfires.

When using the ring mount the left camera will be upside down. Invert this camera to the upright position when switching on so that the sensor cleaning, which relies on gravity, functions correctly.

With direct coupled cameras, if the 2<sup>nd</sup> camera fails to fire when the shutter button is pressed, then press the 2<sup>nd</sup> camera shutter button. The cameras will then operate from either shutter button as long as the cameras remain switched on.

## Potential Mode Dial Problem

A reported issue with some NX1000 cameras relates to the mode dial where the camera jumps from one mode to another without rotating the dial. It is easy to check for this fault by rotating the mode dial while watching the screen and checking that the mode indicated on the mode dial is the same as the mode shown on the screen. If this is not the case then following the simple procedure below will most likely fix the problem.

Timo Puhakka has researched this problem and found that an electrical contact cleaning spray applied to the small gap under the mode dial was the fix. Timo advised that batteries should be removed before using the spray and that the spray should be allowed to dry before reinserting the battery.

One of Nancy and my cameras had this problem, so I sprayed a small amount of CRC 2.26 under the mode dial, rotated the dial several times and the problem was fixed. I assume that the fault related to 'dry' contacts on the mode dial switch, which is what CRC 2.26 is designed to fix.

As mentioned in Part 1 when I recommended using CRC 2.26 on the remote camera connections, CRC 2.26 is promoted as a plastic friendly lubricant for electrical connections that seals out moisture, prevents corrosion and improves conductivity.

CRC 2.26 is available from Electrical Wholesalers such as Lawrence & Hanson or from automotive accessories stores such as Repco. But phone first as not all stores will have the product in stock. John Barry Sales from Lane Cove also sell CRC 2.26 online for \$15.50 per can.



## Conclusion

Nancy and I used various twinned film cameras in the past alongside traditional and quality RBT brand siameased film cameras. In the digital age we have missed the advantages that better quality cameras have to offer.

We now feel that we have at last found a high quality light weight compact twin rig that gives both the close lens separation of a traditional 3D camera with the added ability to mount the cameras on a bar for greater lens separation when the need arises.

In practice we have been very impressed with the image quality we are getting and with the good sync when shooting action.

The Samsung NX1000 cameras have interchangeable lenses and there is always the option to upgrade to 50-200mm tele zoom lenses for shooting wider based action 3Ds (photo below). 50-200mm lenses were included as part of an optional telephoto twin lens pack. There was also an optional wide angle twin lens pack that included a 16 mm lens as well as the standard 20 to 50 mm lens.



From time to time both of these twin lens packs comprising one camera body and two lenses come up for sale on eBay and have been selling in the \$300 to \$400 AUD price range.

For more information on this topic please contact Ray. e: [raymoxom@tpg.com.au](mailto:raymoxom@tpg.com.au), ph: 02 9804 0098

# Samsung NX1000 and NX1100 3D Images

On this and the following pages are some sample 3D images taken by Ray and Nancy Moxom using either twin Samsung NX1000 and NX1100 cameras.

## General Daylight Photography



City from Pyrmont Bridge (photo by Ray Moxom)

1/320 sec @ f 7.1, ISO 100, Focal Length 20 mm, Lens Separation 125 mm



James Craig Rigging (photo by Ray Moxom)

1/250 sec @ f 8, ISO 100, Focal Length 50 mm, Lens Separation 72 mm



Swan & Cygnet (photo by Ray Moxom)

1/250 sec @ f 6.3, ISO 400, Focal Length 50 mm, Lens Separation 125 mm

# Night Photography

Photos taken in the vicinity of Sydney's Circular Quay and Opera House



Dining at the Toaster Building  
photo by Ray Moxom

2.5 sec @ f 6.3, ISO 100, Focal Length 20 mm, Lens Separation 125 mm



Arcade at the Toaster Building  
photo by Nancy Moxom

2.5 sec @ f 6.3, ISO 100, Focal Length 20 mm, Lens Separation 125 mm



Sydney Harbour Bridge from the Opera House  
photo by Nancy Moxom

2.5 sec @ f 6.3, ISO 100, Focal Length 20 mm, Lens Separation 125 mm

# Action Photography

(The Canoe and Kayak Photos were taken at the Penrith White Water Stadium in Sydney's West)



The above four photos are by Nancy Moxom



Kayak (a double ended paddle is used for kayak events)



Canoe (a single ended paddle is used for canoe events)



The above four photos are by Ray Moxom