



2020 MG TROPHY CHAMPIONSHIP

Technical Spec CAM-0001 Patrick Booth Guide to In car cameras

In the three 4G cars we have set up both front and rear facing cameras which record whenever the ignition is on, so they will record all laps, all weekend, automatically.

GoPro cameras do not have the ability automatically to start and stop recording when connected/disconnected from the power. To do this you need a camera with 'Car Mode'.

We have used HD cameras costing between £25 and £140 and they all work fine, the footage from the £25 camera (screen shot below) is good enough for Barry to use for our TV coverage. All the cameras here have Car Mode.



If you buy the version of the camera that comes with accessories you will get enough bits to mount to the roll cage or anywhere else.

Cameras

Recommended:

Mid range 4K – Apeman A80 c. £60, or £35 on eBay

4K camera with Gyro Stabilisation

You can now get the A80 for around £35 new on eBay. It does 4K resolution (which is nice but you don't need it, 1080p is Full HD) and it has proper 'gyro' stabilisation which gives a steady picture. Also comes in a good carry case. If starting from scratch I would just use 2 of these per car. If buying on eBay make sure it's the A80 with the square orange button.

https://www.amazon.co.uk/A80-Underwater-Waterproof-Multiples-Accessories/dp/B07TTDR2TY/ref=sr_1_5?keywords=a80+apeman&qid=1574874576&sr=8-5

Also used with good results:

4K High End – SJCAM M20 c. £100



Great picture quality, reliable, has Gyro stabilisation and supports 64+128Gb Memory Card. There is a cheaper M20 Air but haven't tried it.

<https://www.amazon.co.uk/166%C2%A1%C3%A3Wide-Waterproof-Sports-Action-Camera->

[Silver/dp/B01GPXRP58/ref=sr_1_8?keywords=sjcam+m20&qid=1574872634&sr=8-8](https://www.amazon.co.uk/Silver/dp/B01GPXRP58/ref=sr_1_8?keywords=sjcam+m20&qid=1574872634&sr=8-8)

Cheap low end – Apeman A70 c. £30 or A79 (4K Wifi version)

Still full 1080P HD, reliable, footage from A70 below:

https://www.amazon.co.uk/APEMAN-Waterproof-Wide-Angle-Mounting-Accessories/dp/B01N3Q4DLS/ref=sr_1_10?keywords=apeman+a70&qid=1574873006&sr=8-10



We also use the Apeman A66 as a rear camera, it is also 1080P Full HD

For the front camera we use a 150mm aluminium drop link arm to get the camera to an eye level view as above which gives best view angle and shows the driver's hands on the wheel. Costs £4-5.

https://www.amazon.co.uk/Deinbe-Aluminium-Extension-Lengthened-Replacement-black/dp/B07QGF14MD/ref=sr_1_1_sspa?keywords=deinbe+extension&qid=1574872448&sr=8-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEzTjZXUE5NS0c1S1JOJmVuY3J5cHRIZElkPUeWmJyZMDM0M0RNSE0wOEVZNUwyNyZlbnNyeXB0ZWRBZEIkPUeWNDQ4NzgzMUNLQUozVDg1MjFLNiZ3aWRnZXROYW1lPXNwX2F0ZiZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNRpXRydWU=

All cameras use a 32Gb Class 10 Micro SD card, £5-£6, e.g.:

https://www.amazon.co.uk/SanDisk-microSDHC-Memory-Adapter-Performance/dp/B073JWXGNT/ref=sr_1_3?keywords=32gb+class+10+micro+sd+card&qid=1574875190&sr=8-3

This will easily give you space for a race weekend at 1080p/30fps.

The A80 also supports a 64Gb card

The M20 also supports 64Gb and 128Gb which is enough for a 24 Hour Race 😊

Usage Tips

Set the camera to 'Car Mode' which means it starts recording when external power is switched on. When external power goes off it saves the recording and shuts down. This does mean that you can get lots of short videos on the card moving around the pits etc. but as everything is timestamped it's easy to pick out the big videos of the race/quali etc..

Be aware that if you switch the ignition off then quickly back on before the camera has finished shutting down (about 10 secs) the camera doesn't realise you have powered back on again. You can see the record light in the rear view mirror so if this happens just switch ignition off and on again.

If you don't want to use them this way all apart from the A66 can be switched on and off using a wifi remote control button/wristband which you can get as part of the package or separately.



Most action cameras automatically adjust for the average brightness of the picture. So with in-car they take an average between the bright outside and dark inside – this makes the outside too bright in your video. Set the EV (Exposure Value) to -0.5 to -1 for the front camera and -1.5 to -2 for the rear which will give a good outside picture. You only need to do this once.

Wiring in

In standard ZR wiring the front cigarette lighter socket provides live +12V only when the ignition is on. So if your camera is connected to this it will start recording whenever you turn the ignition on and stop when you turn it off.

Option 1 – long USB leads

Use dual charger in cigarette lighter



https://www.amazon.co.uk/Charger-RAVPower-Adapter-Chargers-2-Port/dp/B00Q2GFP4M/ref=sr_1_12?keywords=12v+charger&qid=1574876492&sr=8-12

then run 2 USB extension cables up to the roof to power the cameras.

https://www.amazon.co.uk/AmazonBasics-Male-Female-Extension-Cable/dp/B00NH11PEY/ref=sr_1_3?crd=3MIFVE5N13KKL&keywords=usb+extension+3m&qid=1574876590&srefix=usb+extension+%2Caps%2C131&sr=8-3

Or just run a long cable up to each camera:

https://www.amazon.co.uk/AmazonBasics-Double-Braided-Nylon-Micro/dp/B074VN744Q/ref=sr_1_8?keywords=usb+cable+3m&qid=1574876679&sr=8-8

Or – use one of these:



https://smile.amazon.co.uk/Cigarette-Lighter-Adapter-Splitter-Detector-Black/dp/B07RDQQRGN/ref=sr_1_8?crid=2UW2JQ1PM467H&keywords=car+charger+adapter&qid=1575385354&srefix=car+charger+%2Caps%2C145&sr=8-8

Option 2 – wired in connection

This is preferred – having an adapter plugged in to the 12V socket is fine until it shakes itself free or gets knocked.

What I do is solder about 3m of dual core cable directly to the contacts of a dual plug in charger then run the cable down behind the cigarette lighter and solder or scotchlock to the cable that connects to the 12V socket (it pulls off so you can get to it). This leaves the 12V socket free for a timer etc.. The +12V is the middle connector, if you are not sure which is which use a test meter or connect any 12V bulb between car body and what you are testing, when it lights up that's the +12V wire.

I then tie wrap the charger adapter to the roll cage roof which gives me 2 USB sockets in the roof to plug in the right cables for the cameras.

