Review of

Replica TPM and Gear Lever

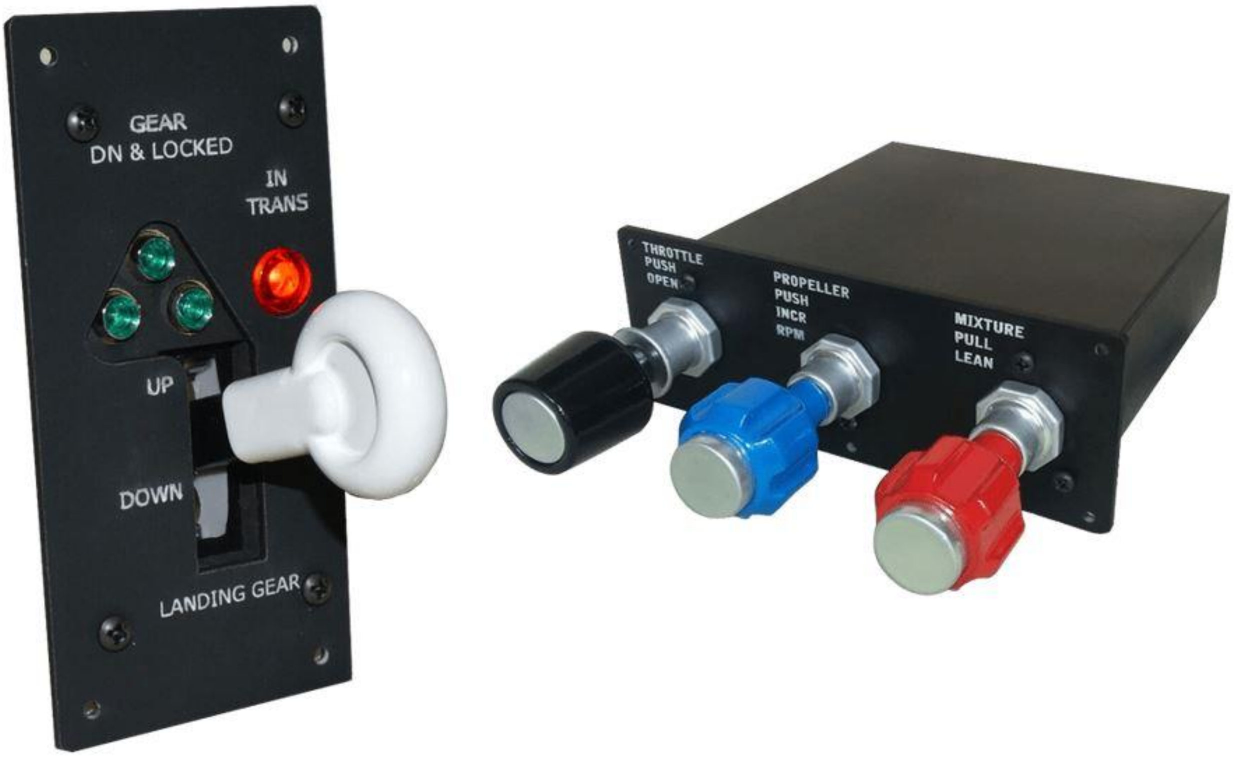
Created by SimMax.it

Intro

I have now for several years been on a quest of testing various software and hardware materials created specifically for flight simulation purposes and this time I have found a rather new flightsim manufacturer www.SimMax.it that sells both blue-prints to aircraft panels and also modules both plug and play and also modules without the interface card.

This review will cover two of their recently developed products – one is the replica Cessna style TPM and the other is an independent replica Baron 58 style landing gear lever featuring gear lever as well as LED lights.

This is the first time I test and review materials from SimMax but the products has defiantly proved their worth and I was very positively surprised – I do hope you enjoy the write-up of my experience of these new and exiting products and how they in my opinion performed.



Packing & Delivery

The products included in this review were ordered directly at www.SimMax.it which is a multi-language international website and where you can make your purchase in several currencies with world-wide direct shipment. The company is an Italian company located on the island of Java in Indonesia and the products are made by Simone Saruis who is a very talented flightsim builder.

The delivery was performed by the Indonesian Postal Service which carried the package to the international haulers and finally to the Danish Postal Service which did the final delivery. Overall the entire transit time was about two - three weeks however; the extended delivery time was mainly due to a delay at the Danish customs service. The shipment was supported by track and trace and the number was sent directly to me by SimMax – this was excellent so that I could keep track of how close the pack was getting to delivery. You know that when you have finally ordered some new hardware, you just can't wait to receive it.

Receiving the package I saw that the transport had been carried out nicely and there were absolutely no signs of rough handling on the package. The parts were carefully packed within a strong and thick cardboard box which had an inner layer of polystyrene plates to shield the parts from rough handling. Furthermore the parts were also packed in a dual/triple layer of bubble wrapping, so the parts were very carefully and nicely packed.

The TPM Cessna Style

My primary focus immediately zoomed in on the Cessna style TPM which absolutely was looking awesome laying there in the box. Included with the TPM is also the USB-cable 2.0 A/B (short version) together with mounting screws for an easy mounting into your home cockpit.

The TPM is built as a box with the measurements; width 157mm, height 45mm and depth 175mm featuring a faceplate with the measurements; width 170mm, height 65mm and depth 3mm. The button of the TPM is made of metal, most likely aluminum whereas the cover (sides, end and top) is created in good quality plastic which is painted in black and features a high quality glance. The faceplate is laser cut hard acrylic and features engraved legends of good quality.

The cylinder arms or levers are made of aluminum as well as the fasteners – these however can be ordered as a plastic version to keep the costs down, but I would recommend upgrading to the aluminum version in stead. That does really add more realism to the experience.

Last but not least, the knobs. The throttle, the prop and the mixture knobs are all 3D printed knobs made of hard plastic and thereafter polished and painted with a great accuracy, realistic colors and focus on quality and eye candy. The knobs are absolutely awesome and indeed very realistic replica knobs that defiantly provides a great experience to the simmer. The core of the knobs is the aluminum cylinders and the front end of the knobs is also aluminum which really adds to the feeling of a realistic TPM and the experience of using it.

Overall the quality of the TPM was better than I expected – I did expect the TPM to be rather heavy but that is certainly not the case. The weight is less 1 kg for the complete TPM which makes is very easy to mount into your home cockpit without the use of additional support.

I did see a guy in the forum at SimMax who had applied extra mounting brackets on each side of the TPM, so that he could mount the TPM below his desk. Very nice idea and maybe an idea for a potential selectable option upgrade of the TPM.

There is no twist function on the cylinders which of course is not necessary, however by including that it might send the TPM to reach the skies, because I don’t believe I have seen that on other TPM replicas from other manufacturers. That is simply just an idea for a potential future upgrade or option.

Opening up the TPM I quickly got an overview of the complexity within – not really that complex but everything is placed perfectly and mounted firmly. The interface card is an Arduino UNO card with a USB connector and the card is placed in the back of the casing with the USB connector mounted to the left side of the casing, probably due to the limited space available within the box. This works nicely but for my home cockpit I would have preferred that the USB connector was mounted through the back-end of the casing, but that is just for my home cockpit.

To open the lid you need to unscrew 9 small Phillips screws and carefully tilt the lid from the opposite side than where the USB socket is placed – very easy!

The interface card features several available pins, so of you have additional switches or buttons in your home cockpit, or even additional axis that you would like to add, then you can actually use these extra pins to do the connection. Nice detail that could come in handy.

You are also able to increase or de-crease the tension on the cylinders by either tightening or loosening the screws in the clamp between the pipe and the potentiometers. I did not change the setting on my TPM since I found the tension to be very nice and close to reality of e.g. the Cessna 172, but this might be more user friendly if the tension control was mounted in a way where you could access it without opening the lid – no problem though.

Connecting the TPM to the computer was easy – simply plug in the USB in both the TPM and the computer and I found that windows immediately recognized the interface card and I was now already connected. The connection was tested on both a USB2.0 socket as well as the newer USB3.0 socket which is actually notorious for not working properly with several gaming devices – this however was not the case, the TPM worked perfectly using both the USB2.0 and the USB3.0 socket.

The TPM is a plug and play unit however, when connected you still have to calibrate each lever and you also have to assign the corresponding functions that you would like the TPM to replicate. Originally the TPM is created to utilize the throttle, the prop and the mixture, but you can of course assign a variety of other axis/functions to it in stead if you want to. I did notice that when calibrating the axis there actually showed up two axis for the mixture, but that was because the Arduino UNO interface card features additional axis inputs.

I tested the TPM on both the old 32-bit Microsoft FSX platform, the new 64-bit Lockheed Prepar3Dv4 platform and additionally also the 64-bit XPlane11 platform. The TPM worked perfectly on all platforms and was recognized as interface card ‘UNOJOY’.

Assigning the axis was easy and I could perform the assigning throughout all standard assignment tools within each simulator. I also tested the assigning using the FSUIPC by Pete Dawson and that also worked beautifully. I assume that basically you could use more or less any programming tool or language as SIOC, LINDA, C++ etc. as long as the interface card is recognized by windows.

One thing you need to be aware of when assigning the TPM in XP11 is, that if you already have assigned a function/axis to a different controller that already is plugged in, then you will get an error. This I found out when assigning the throttle axis on the TPM to work on all throttles – this axis and function was already assigned to the throttle axis on my Logitech controller and that caused my assigning of the TPM to not work.

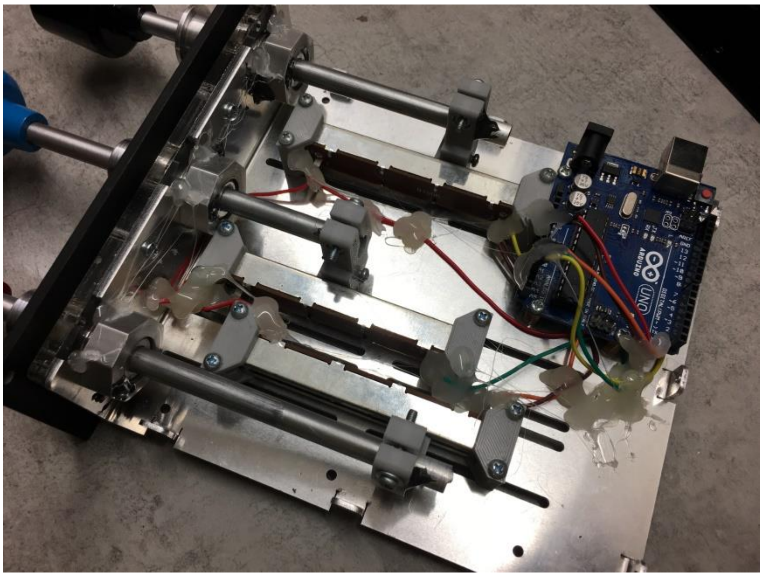
To overcome this issue all I had to do was to unplug the Logitech controller or simply just remove the assignment from the Logitech controller. This issue I only encountered using XP11 and not using either FSX or P3Dv4.

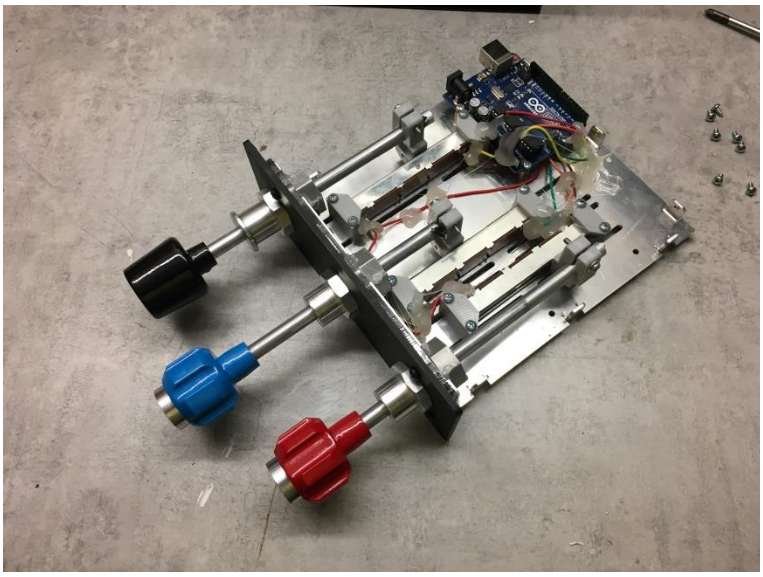
Before I found the solution I contacted SimMax to get a little help, and SimMax urgently replied with several suggestions to fix this issue – Thanks SimMax for quick and excellent support!

The potentiometers are of a good quality with a perfect reaction to my change in inputs however, I have not been able se verify the duration to see how many cycles the potentiometers can do before failing – additionally there are not applied Hall Sensors to the unit – that could maybe be an idea for an upgraded version with even better sensitivity.

Short YouTube video created by SimMax.it here:

https://www.youtube.com/watch?v=_eDvDxpZlwE





The Gear lever Baron 58 Style

The TPM certainly set the quality bar quite high so it was absolutely with great anticipation that I now moved my focus on to the gear lever Baron 58 Style. I have for a while been looking for an independent gear lever that was not either a Boeing or Airbus gear lever or even a part of a secondary system like trims or similar, so when I discovered the gear lever at SimMax, I just had to check that one out.

This gear lever is not a ‘Plug ‘n Play’ unit and consist of the faceplate, the back plate, the lever, the LEDs and the mechanism behind. All parts are assembled including the connection wiring and the unit is all ready for mounting into your home cockpit.

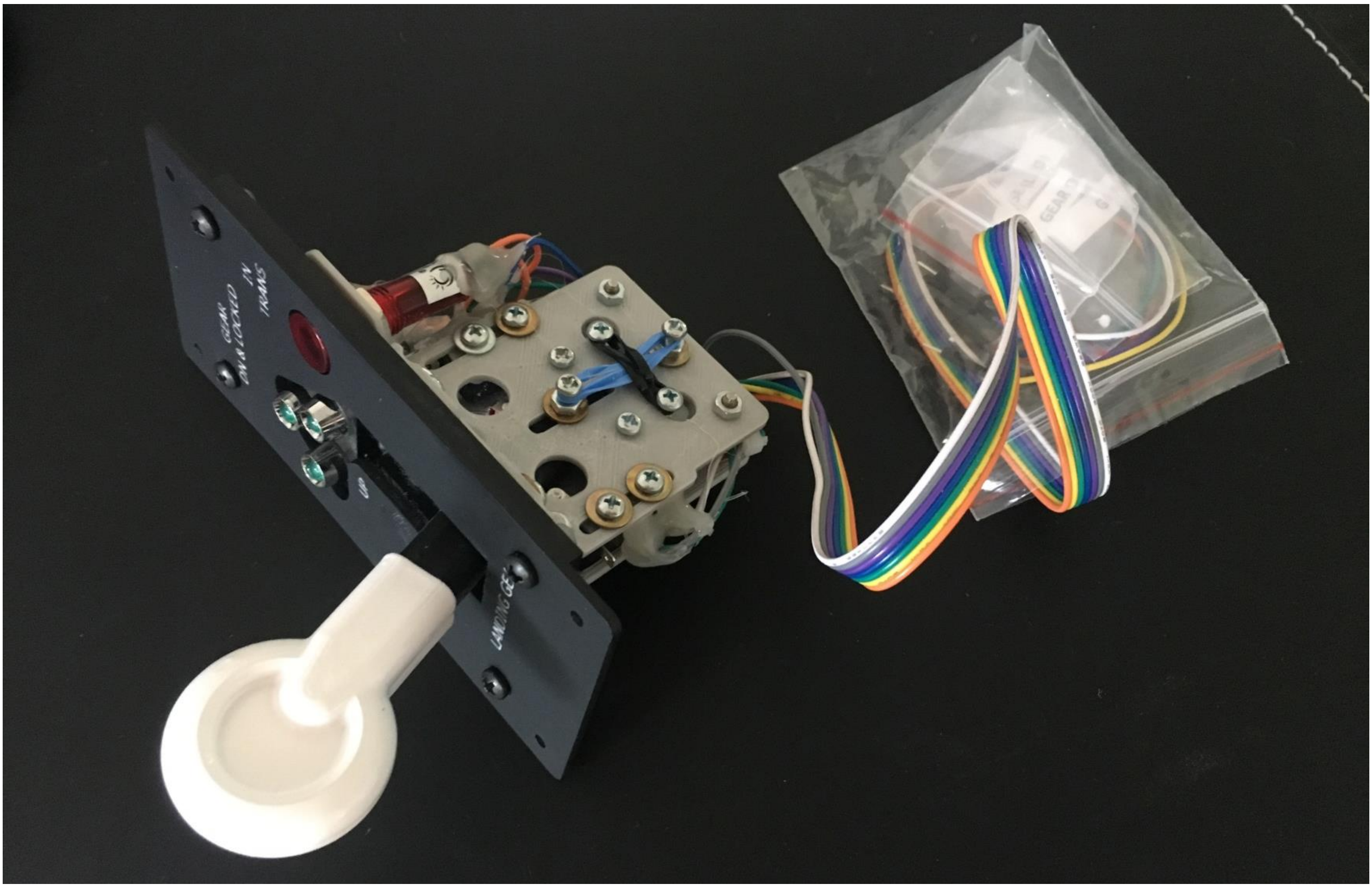
The faceplate is made of 2mm acrylic plate that is laser cut, painted and thereafter the legends has been engraved on it. Behind the faceplate is the back plate which also is an acrylic plate but a 5mm plate instead that also has been laser cut – normally a 2mm acrylic plate can be rather fragile but when you actually have both a faceplate and the back plate put together, you have excellent stability within the plates and a combined thickness of 7mm.

Also, the faceplate features mounting hole in each corner and included in the package are also four mounting screws so that you can mount the gear lever immediately. The acrylic faceplate feels really nice but of course it could have been over-the-top if the faceplate was aluminum. I know the costs would change, but that might be an idea for a selectable option.

The mechanism behind the gear lever is built from various materials, primary 3D printed plastics and both looks and works very professional. Taking a look at the lever and the knob itself I must say it looks and feels awesome – just what I had been waiting for. The knob is 3D printed and a superb replica of the real gear lever knob found in the Baron 58 which I have found several images of on the internet for comparison. After the 3D print the knob has been giving a manual finish and there after a paint job – all is very nice with a great feel for realism and accuracy.

Connecting the gear lever to the computer requires an interface card that features both input and outputs or as a minimum two interface cards where one is an input card and the other an output card.

I tested the connection first on an interface card from Desktop Aviator (DTA) which only supported the inputs meaning only the gear lever up/down function. Secondly I tested the inputs on a common Pokeys57U interface card that supports both input and outputs and that also worked perfectly. Originally the gear lever was built to be connected to an Arduino card, but any interface card that can be recognized by windows can be used however, just to go all-in I purchased an Arduino Mega card and did the connection and test using that card and to even test some more options, I also tried to connect the gear lever to the available pins in the Arduino UNO card within the TPM.


GEAR
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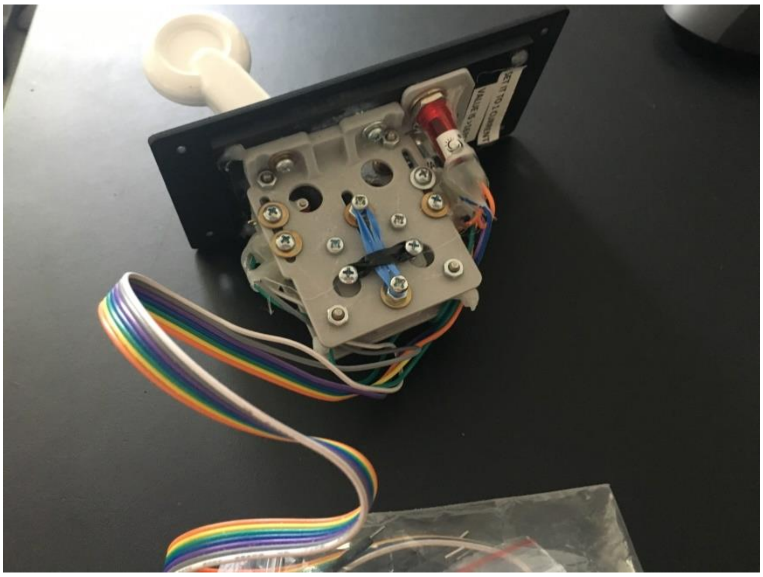

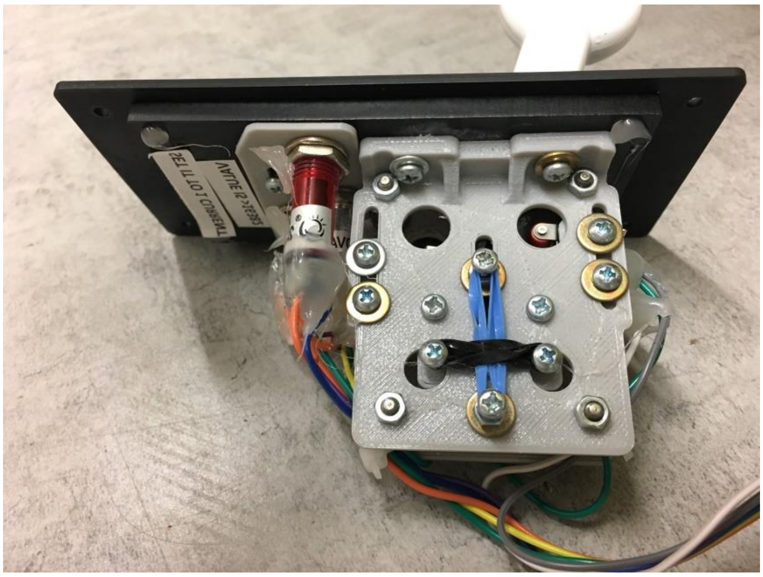

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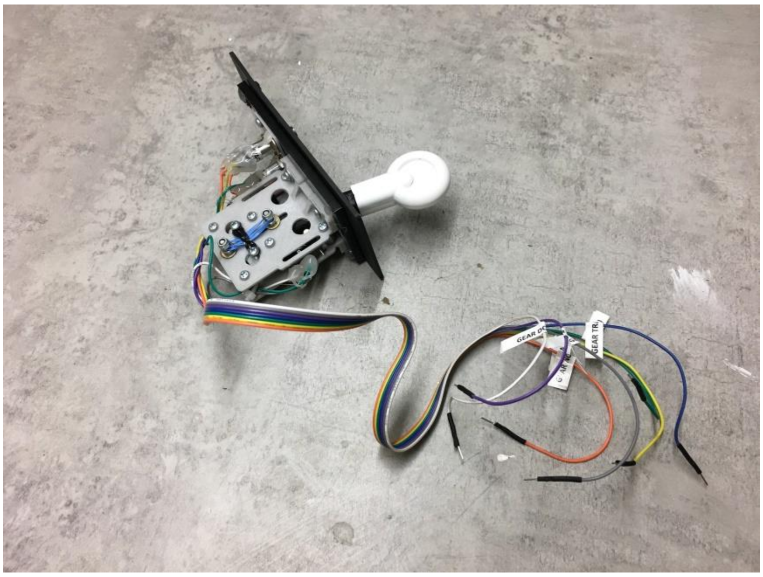
GEAR DO
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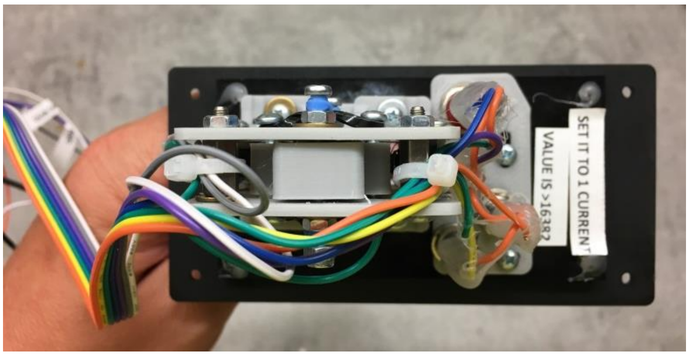
Depending on the interface card to be used, the connection can vary and please be aware that if you have two separate cards – one input and one output, you probably have to split the GND wire into two wires that can be connected to each interface card.

The wiring on the gear lever is very simple – yes there are several wires, but each wire is perfectly marked with what function is has to perform as well as each wire of course also has a unique color so the basis for the setup is perfect.

You have a total of 7 wires where four of them are for the outputs (LEDs), two are for the inputs and one is a common GND. Each wire is marked like e.g. 'LED Nose Gear' and this explains that this specific wire has to be connected to an output and controls the light behind the nose wheel indicator. There are the following markings:

- Orange ➔ LED Nose Gear
- Yellow ➔ LED Gear Left
- Green ➔ LED Gear Right
- Blue ➔ LED Gear in Transit
- Purple ➔ Gear Up
- White ➔ Gear Down
- Grey ➔ GND



The lights are all outputs and e.g. the lights for the nose, the left and the right gear are green lights that light up when the gear has been lowered and locked into position. These lights turn off when the gear is raised where the LED 'Gear in Transit' now lights up. This light is a red light and will light until the gear has been fully raised and locked where after the light turns off – please see this short YouTube video created by SimMax of this feature:

https://www.youtube.com/watch?v=aV-GN_QGEkg

This gear lever is not just a click/click gear lever but actually has a built-in feature like e.g. the Boeing B737 levers on the market. To be able to raise or lower the gear you have to pull the lever towards you to 'unlock' it – and not before you do that you can't move the lever preventing unwanted or accidental movements of the gear lever. This is a small but superb detail that in my honest opinion shows how much detail this new manufacturer goes into, and again sets the bar high for these products.

Programming the gear lever (Inputs) to the functions is very similar as to assign functions to any other piece of hardware like the TPM previously tested in this review. I tested the programming or assigning of functions on the default assignment tools within FSX, Prepar3Dv4 and Xplane11, and this was absolutely no problem. I also tested the programming using the FSUIPC and again this also worked easily – you don’t need to be a hardcore programmer to get this gear lever connected and up and running, but if you do need some help, then SimMax.it has a downloadable guide/manual on their website that will help you connect the gear lever and there after also set it up accordingly. The guide is written in both Italian and English and is very easy to read and features lots of images to help.

In regards to programing the LEDs (Outputs) then this is a different story – I have not programmed outputs that many times before, so this was quite new to me. Apparently this is not possible to do through the default tools within each simulator and I also tried if it would be possible using the FSUIPC on its own, but I couldn’t get that to work… maybe there is something that I have overlooked. Well, I decided to follow the manual from SimMax’s website instead and downloaded two programs – links to both downloads are available in the manual:

- Arduino IDE
- Mobiflight

I already had FSUIPC, but you can also download that using the link in the manual. I did this programming on the FSX and P3D platform, but if you would rather do it for Xplane, then use the included link in the manual named **‘ARDSIMX’** which will be the interface to Xplane similar to the MobiFlight for FSX/P3D.

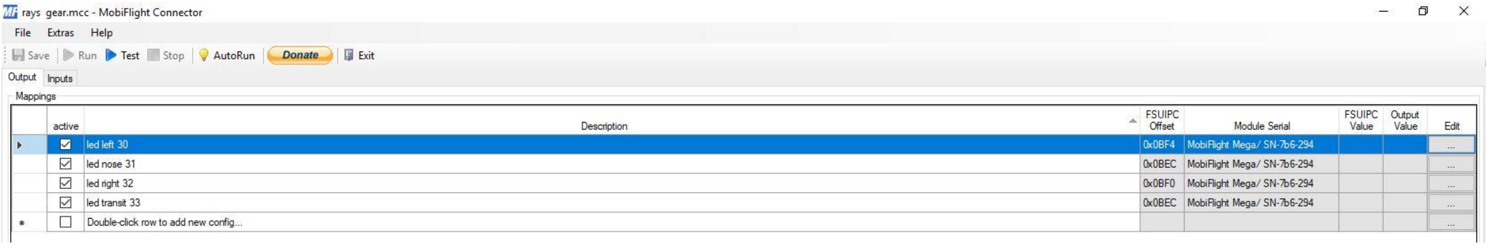
Hereafter I first installed the Arduino IDE which is the software for the interface card and thereafter the Mobiflight software which is the software where you can assign inputs and outputs with. I followed the manual picture for picture, but since this was a new software tool that I was not familiar with, then it was certainly something I had to get used to.

You can either program everything manually or ‘upload’ a complete file – I started out trying the complete files (.mcc and .mfmc) from SimMax, but encountered some issues with the .mfmc file – I contacted SimMax who gave me excellent and quick support followed by a session on TeamViewer where SimMax made an override of the file and did the manual programming to ensure everything was working perfectly. Here I could see how easy the software of MobiFlight is to program with dropdowns for the FSUIPC options etc. Almost just like the standard assignment tools but where you of course had to link each function to the specific pins on the interface card.

The issue found with the file was that it contained a complete code for all modules from SimMax but I only had this gear lever and the TPM, so the program couldn’t really figure it out due to what I think was to much irrelevant information. After just assigning the gear lever functions the program worked beautifully.

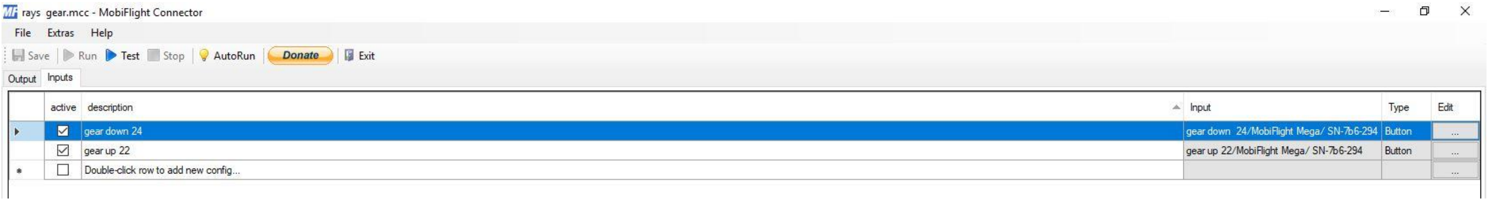
My settings on the Arduino Mega card is: Gear Up ➔ Pin 22, Gear Down ➔ Pin 24, Left LED ➔ Pin 30, Nose LED ➔ Pin 31, Right LED ➔ Pin 32 and Transit LED ➔ Pin 33. GND in common.

Inputs and Outputs setup in MobiFlight:



rays gear.mcc - MobiFlight Connector
File Extras Help
Save Run Test Stop AutoRun Donate Exit
Output Inputs
Mappings

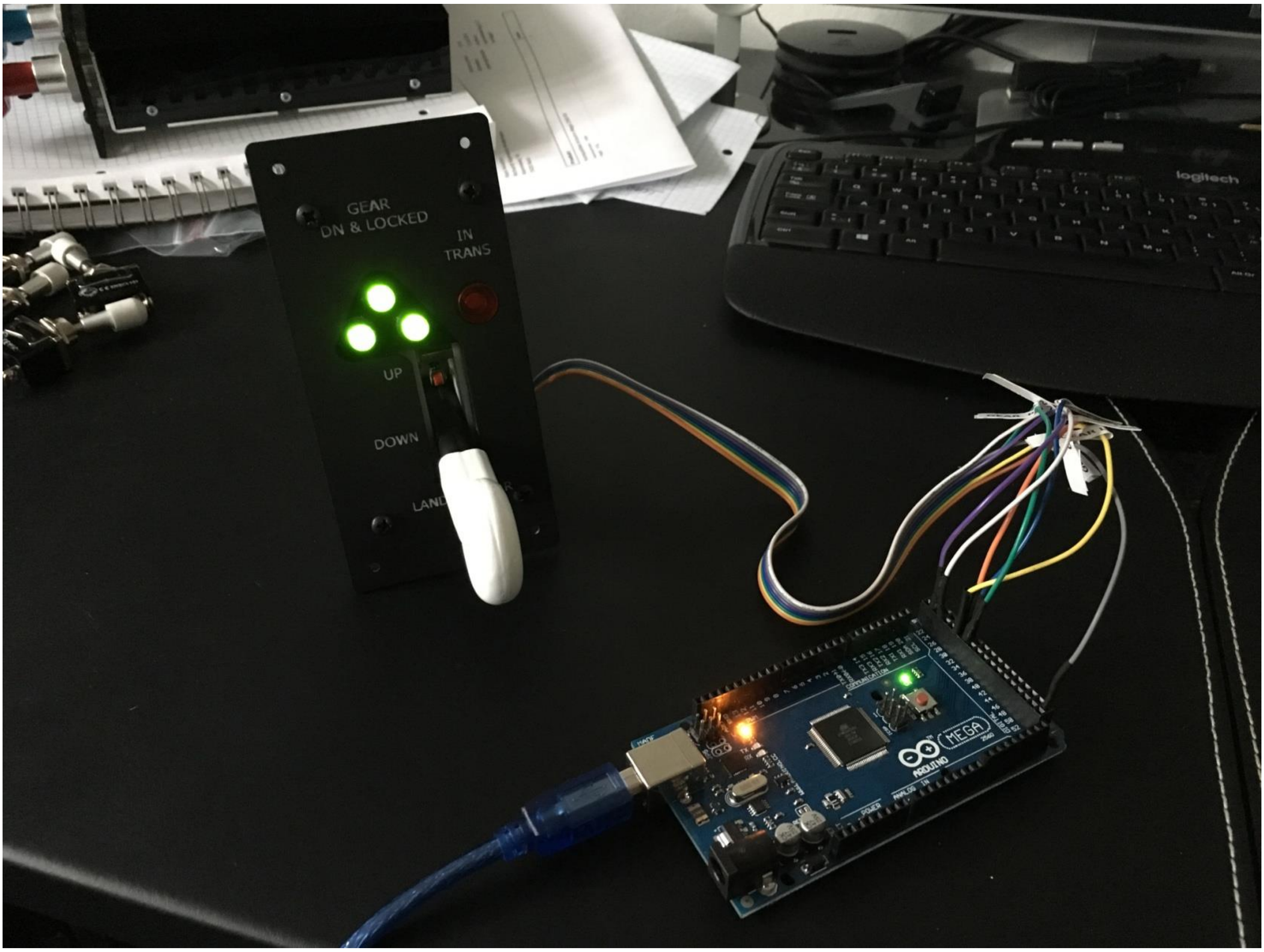
	active	Description	FSUIPC Offset	Module Serial	FSUIPC Value	Output Value	Edit
▸	☑	led left 30	0x0BF4	MobiFlight Mega/ SN-7b6-294			...
	☑	led nose 31	0x0BEC	MobiFlight Mega/ SN-7b6-294			...
	☑	led right 32	0x0BF0	MobiFlight Mega/ SN-7b6-294			...
	☑	led transit 33	0x0BEC	MobiFlight Mega/ SN-7b6-294			...
*	□	Double-click row to add new config...					...



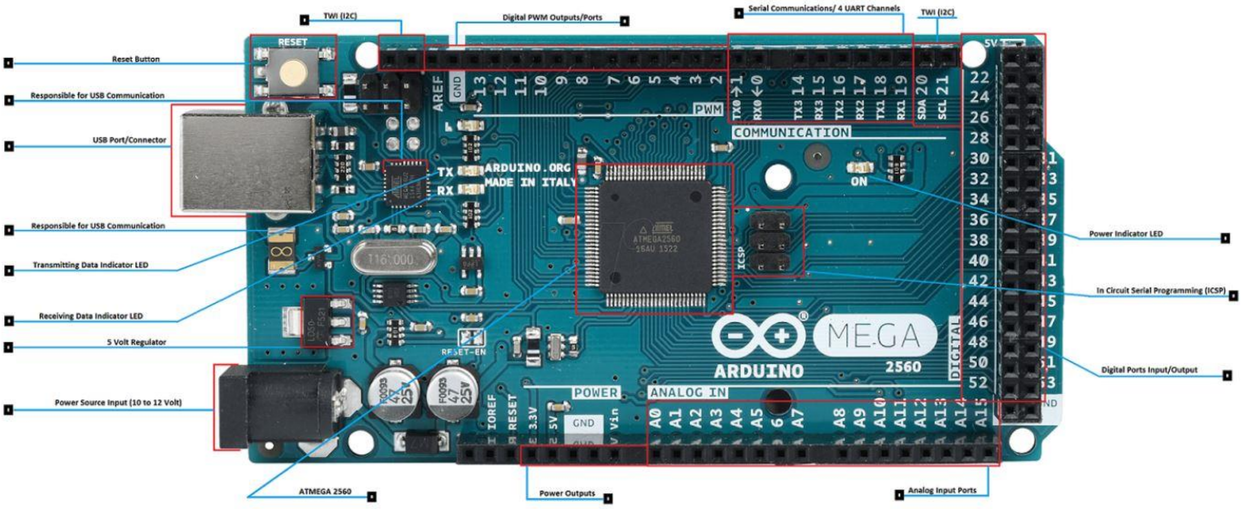
rays gear.mcc - MobiFlight Connector
File Extras Help
Save Run Test Stop AutoRun Donate Exit
Output Inputs

	active	description	Input	Type	Edit
▸	☑	gear down 24	gear down 24/MobiFlight Mega/ SN-7b6-294	Button	...
	☑	gear up 22	gear up 22/MobiFlight Mega/ SN-7b6-294	Button	...
*	□	Double-click row to add new config...			...

Result when running MobiFlight behind Prepar3Dv4 with Cessna 172 from Alabeo:

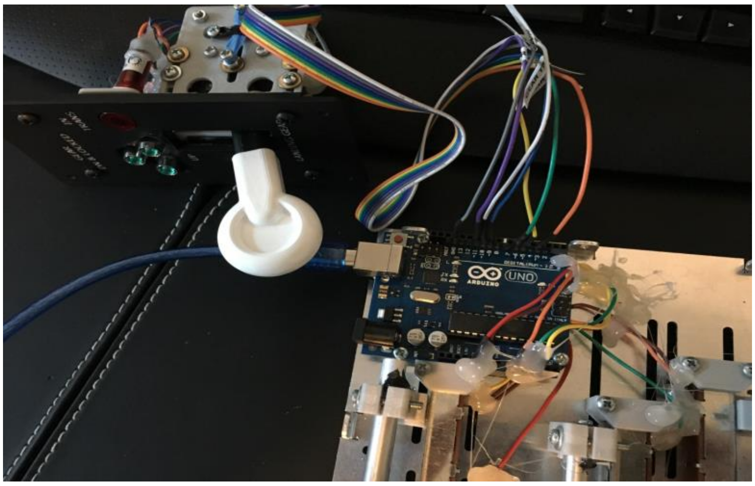


One note to the test I had using the TPMs Arduino UNO card is, that you can only utilize the inputs using that card. To apply the outputs you do need to use the Arduino MEGA card which can be purchased from various websites – I found mine at the www.Arduinoshoppen.dk for a total of 148,- DKK including VAT charge of 25% but excluding the shipping charge. You can probably find this card on a website in your country as well.


TWI (I2C)
Digital PWM Outputs/Ports
Serial Communications/ 4 UART Channels
TWI (I2C)
Reset Button
Responsible for USB Communication
USB Port/Connector
Responsible for USB Communication
Transmitting Data Indicator LED
Receiving Data Indicator LED
5 Volt Regulator
Power Source Input (10 to 12 Volt)
Power Indicator LED
In Circuit Serial Programming (ICSP)
Digital Ports Input/Output
ATMEGA 2560
Power Outputs
Analog Input Ports

Arduino MEGA Pinout

Gear lever connected to the Arduino UNO card in the TPM:



Conclusion

To wrap up my experience of these new and very exiting pieces of simulation hardware I can certainly say that I was very positively surprised. The quality is very good, the finish and paintjob is beautiful and the accuracy and focus on the details are absolutely perfect.

Materials used are good quality laser cut acrylics, 3D printed plastics and some parts are even aluminum for better look and feel which absolutely does provide a sensational experience and a greater realism.

Connection is easy – for the TPM it is plug ‘n play and for the gear lever it does require that you purchase an input/output interface card and do the manual connection yourself with your preferred programming tool or download the freeware software tools. An idea for an upgrade of this item, the gear lever, could be that it would be built with an option as a plug ‘n play item like the TPM – of course for an extra cost but I am certain that some simmers look elsewhere simply because they either do not wish to or do not think they are able to do the manual connection.

The two products that I have just tested are in my honest opinion awesome and certainly feature a high quality rarely seen by a new manufacturer. It is very easy to see that SimMax.it has a passion for aviation and flight simulation and have a superb eye for details, quality, finish and realism – very nice to see other products that are not just for the heavy tubeliners but just as much for the GA sim aviators.

I strongly recommend both these products to my fellow simmers – the quality is good and the price level is fair. Both items are a 4+ on a scale from 1-5 meaning that they are well above what I had expected - of course there are always ways to improve the products but as they are now, I am so amazed by the effort and talent behind the creation of these products.

Finally I would like to thank SimMax.it for joining the flight simulation community which these awesome products that absolutely will add realism to any home cockpit. Keep up the excellent work and I will be looking forward to see future developments from you for sure.

Rays Aviation

Review Test System

- **OS** Win7 32-bit & Win10 64-bit
- **CPU** Intel Core™ i7-4790K 4x4,00GHz (Turbo 4x4,40GHz)
- **Motherboard** Asus Maximus VII Ranger (ROG-Series)
- **CPU** Cooler Antec Kuhler H20 650 Water Cooler
- **RAM** Kingston HyperX Beast-series 32GB DDR3-2133
- **Hard disc Primary** 500GB Samsung 850 EVO SSD (Solid State Disk)
- **Hard disc Secondary** 3TB Seagate Barracuda (7200rpm, 6GB/s)
- **Graphic Card** Asus GeForce GTX 980 Strix OC 4GB
- **Power Supply** Seasonic 750RT 80Plus Gold
- **Sound** Asus ROG SupremeFX 2014 Sound (Sonic Radar II)
- **Netcard** Asus N53 Wireless USB (Dualband) Intel GameFirst III w/LANGuard
- **Internet Connection** 120Gbit/s

- **Lockheed Martin Prepar3Dv4**
- **Laminar Research Xplane 11**
- **Microsoft Flight Simulator FSX + Acceleration Pack**
- **REX SkyForce for P3Dv4**
- **REX Overdrive for FSX**