

Installation notes for the Mark 6 G6FGO Green series K1200LT Ibus Radio interface.

PLEASE read these notes all the way through, before starting the installation.



The **K1200LT Ibus interface** is really easy to install. If you can swap the radio, then you can fit the interface just as easily. There are just three / four connections to the radio end of the BMW loom to make it work. Any other colour wires are for options and can be safely ignored for now.

These instructions assume that you are going to hardwire the kit, rather than use the optional Plug and Play loom adapter...

* The **BROWN/BLACK** wire from the module is the **GROUND** connection, connect this to a **BMW BROWN** in the radio loom.

* The **WHITE** from the module is the IBUS connection, connect this to **BMW WHITE/PURPLE** in the radio loom. Then are two options:

EITHER,

* The **RED** wire from the module is the **12V ACC** connection wire, connect this to the **BMW PURPLE/YELLOW** in the radio loom. **NEVER** use this purple / yellow wire to power anything else except the radio as it cannot provide much current; damage to the stingray controller may result!

* The **YELLOW** wire from the module is the permanent 12V line, connect this to the **BMW RED** in the radio loom.

OR:

Connect the RED and YELLOW module wires together and connect them to the radio's wiring loom if it has a switched power output to feed an amplifier or aerial etc. This is normally coloured **BLUE/WHITE**, sometimes **BLUE**. Check your radio's manual for details.

Installation options for the physical module.

There are various places that the module can be installed if not using the Plug and Play loom. The module requires a permanent 12V line, a switched 12V line, ground and the iBus signal. These are available in three places on the K1200LT:

The radio housing...

This is the conventional position which is waterproof and requires only short connections. It is also at little risk of being disturbed in any way. Wiring can be done either direct to the wiring loom or to your own loom adapter, modified to pass the iBus signal. You can use one of the unused pins in the loom adapter to do this, moving the pin in the square adapter plug to match the BMW socket iBus pin.

The diagnostic connector...

This is under the seat, on the right hand side behind the side panel. You can piggy back onto the signals there, but you will need a longer Aux cable to get the control signals into the back of the radio. Some waterproofing will also be required of course, as the module is definitely not waterproof.

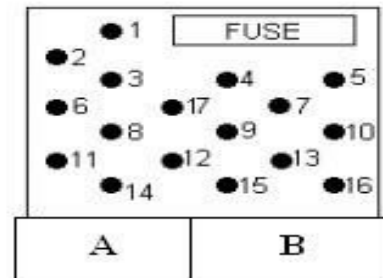
The CD changer connection in the pannier...

This is probably a useful location as all the connections you need are there, directly back to the radio.



Audio

Radios Old Generation 17 Pins



Conector 17 Pines X18126			
PIN #	Funcion	PIN #	Funcion
1	Spk Front Left +	10	TEL ON / (Speed Signal)
2	Spk Front Right +	11	Spk Front Right -
3	Spk Rear Left +	12	Spk Rear Left -
4	Phone MUTE	13	12v Ilum (58g)
5	12V Acc	14	Spk rear Right -
6	Spk Rear Right +	15	GND
7	I-BUS	16	12V Ant Out
8	Spk Front Left -	17	-
9	12V Dir		

A Conector 10 Pines X01037 o X13321			
PIN #	Funcion	PIN #	Funcion
1	CD CHG Left In	6	CD CHG GND
2	CD CHG Right In	7	CD CHG GND
3	Tel Audio In -	8	Tel Audio In +
4		9	
5		10	

B Conector 10 Pines X18805			
PIN #	Funcion	PIN #	Funcion
1	Tape Right +	6	Tape Left +
2	Tape Right -	7	Tape Left -
3	NAV BUS	8	AUX Input Right +
4	AUX Input GND	9	AUX Input Left +
5	Audio Nav In -	10	Audio Nav In +

Connect the four wires to the loom in the pannier and make up an Aux cable to the original audio cable from the CD changer. At the radio end, you will need to make up the opposite adapter to get the control signals back into the radio. Interconnecting your new radio head unit to the BMW wiring without the optional adapter kit: (See later pages for that option).

Typical wiring for any ISO type (the most common) radio heads. Note that this is not always followed by manufacturers and you will need to check your own manual for confirmation. In particular, the ISO yellow and red are sometimes swapped, Sony is typical for this.

The switched output may be called "Electric aerial" or "amplifier switching". It may be blue or blue/white.

Wiring details (PLEASE CHECK as differences have been noted!)

Function	ISO	BMW – 2004 (black stingray)	2004 on (silver stingray)
Ground	Black	Pin 15 Brown	Pin 15 Brown
Permanent 12V+	Yellow	Pin 9 Red	Pin 9 Red
Acc switched 12V+	Red	Pin 5 Purple / yellow	Pin 5 Purple / red
12V+ out from radio	Blue (/ white)	No connection	No connection
Ibus control	No connection	Pin 7 White / purple	Pin 7 White / purple
Left front speaker negative	White / black	Pin 8 Yellow / brown	Pin 8 Yellow / brown
Left front speaker positive	White	Pin 1 Yellow / red	Pin 1 Yellow / red
Right front speaker negative	Grey / black	Pin 11 Blue	Pin 11 Blue
Right front speaker positive	Grey	Pin 2 Blue / red	Pin 2 Blue / red
Left rear speaker negative	Green / black	Pin 12 Yellow	Pin 12 Yellow
Left rear speaker positive	Green	Pin 3 Yellow / blue	Pin 3 Yellow / blue
Right rear speaker negative	Purple / black	Pin 14 Blue / grey	Pin 14 Blue / grey
Right rear speaker positive	Purple	Pin 6 Blue / purple	Pin 6 Blue / purple
Illumination dimmer	Orange / white	No connection	No connection
Radio mute line	Pin 2	No connection	No connection

After a ‘piggy back wiring’ test, it is strongly advised that the BMW plug is cut off, along with the ISO plugs and the connections made by soldering and sleeving.

Testing:

Switch the ignition to the first (acc) position. Press the **BMW ON** button and the panel should light up and the radio will come out of standby (you might need to press the radio’s **ON** button too). Now press the **BMW MEM** button for a count of five. This will synchronise the two together. At this point, you should see something in the display. Pressing **BMW CD** should change the display. If the display remains blank or says “no radio” and the control panel shuts down after 30 seconds, the module is not

receiving the Ibus commands. Re-check connections, paying close attention to the **white / purple** wire.

For Infra Red blaster control, (not applicable to 3.5mm lead REM radios):

Once connected, just feed the blaster wire **around the rubber radio surround** as shown and stick it down to the floor or wall near the IR sensor in the radio, using the supplied adhesive pad on its underside. The other end plugs into the left hand socket on the module.

If you are not sure where the sensor is, leave the blaster loose temporarily and experiment with the position until it is reliable. The module itself can be stuck to the top of the radio, behind the plastic shield using the supplied Velcro pads. That is the basic installation complete. If you would like to be able to easily update the software, plug in a mini USB cable and bring it into the front tray, down one side of the rubber sleeve surround like this:



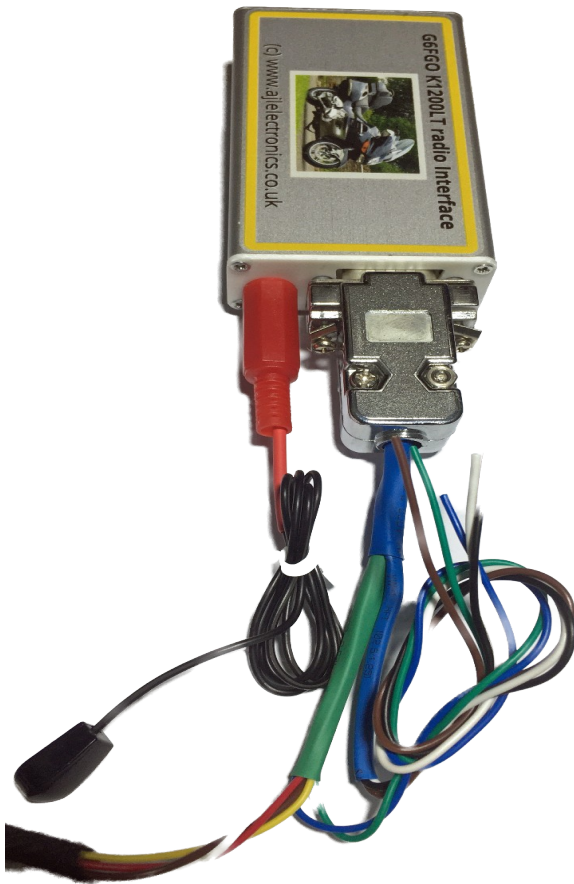
Here, the blaster has not yet been fixed into place, but it should be stuck down close to the radio adjacent to its IR sensor. You might find that it works well stuck to the wall of the tray, adjacent to the radio's sensor. If you don't know where that is, leave the blaster eye loose and experiment with its position left or right until control is reliable. Alpine DAB radios tend to be on the right as you look at the front panels. None DAB tend to be on the left, but experiment if not sure. The radio manual might also show the location. Cable routing etc is up to you, just don't trap the thin blaster wire between panels etc. The ideal routing is at the corner of the rubber surround, either side.

Power up the stingray once everything is connected and make sure that the radio has powered up. Don't refit all the bodywork until it has all been seen working. The display should be showing something now and the stingray lights will remain on. If they go out after 30 seconds and there is no display, you have not connected the module correctly. Recheck, especially the white/purple connection.

Make sure that the radio is set to **Source 1** (usually the first tuner), **Band 1**, **Preset 1** as it would be from a fresh start when power is first applied. Now hold down the **BMW MEM** button for a count of 5. This will synchronise the module with the radio display. This can be done at any time if the synchronisation is lost.

For Pioneer, JVC or other SWC radios with direct 3.5mm connection :

Connect the provided 3.5mm stereo cable between the radio's 'SWC' or "REM" socket and the 3.5mm socket on the module instead of the blaster. The module has to be configured for this option for it to do anything. Please contact us if you are changing to a resistive type radio from a radio previously configured for Alpine direct connection. Be careful not to put the radio end into the **Radio's MIC** socket accidentally. The IR blaster is no longer supplied, superceded by direct connection for all.



Drawing 1: No longer supplied



With 3.5mm SWC lead.

Last job to do is to apply the decals to the control panel on the stingray. These are self adhesive and you will see that the backing is in two pieces. Remove one half and it will be easy to position the strip, lightly tacking a corner down. When happy, smooth down the exposed half and then remove the backing from the other half, before smoothing down.



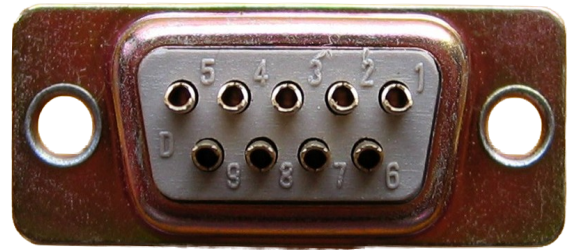
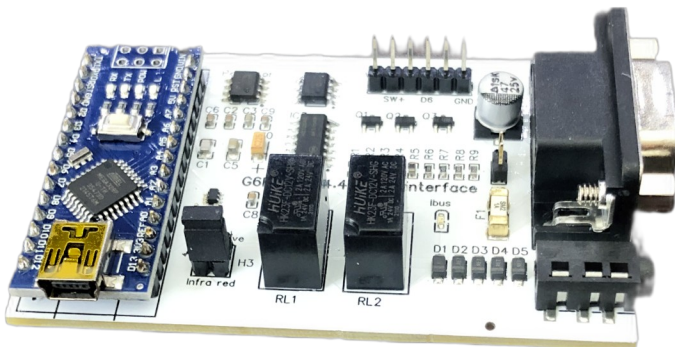
Additional options:

Control output.

There is a switched output in the module that can be controlled by the Stingray button of your choice if enabled in the software. By default it is controlled by the **SCRIP** button. When pressed, it closes a normally open switch contact in the onboard relay and you will see **LightsON** appear on the display. Press **SCRIP** again to switch it off. These contacts are Voltage free, unless the H2 header is fitted to the PCB.

These relay contacts appear on pin 4 and pin 2 on the interface socket. They are wired with an ORANGE and a BLUE wire. The blue can be made 12V+ by putting an optional link across H2 on the PCB (behind the multi connector). Then pin 2 will output 12V at up to around half an Amp or so when SCRIP is pressed. Pin 4 will have become an ACCessory controlled 12V. A load heavier than half an Amp can be controlled by an external relay, from the switched output on pin 2. There is an ignition controlled output on the PINK wire.

On the interface connector, there are also two unbuffered digital outputs, direct from the microprocessor. Most people will not use these, but for those who do need them, it is a simple matter to solder to the back of the connector.



On request, the software can be configured to control a radio transceiver's **PTT** instead (Amateur radio / CB / PMR) and then the radio sound will be muted when in **TRANSMIT** mode.



Pin connections:

- 1 12V ACCessory switched power (Red)
- 2 Relay contact Normally Open (Orange)
- 3 Ground (Brown)
- 4 Relay contact COM, can be ACC 12V out (Blue)
- 5 D10 microprocessor output (not wired)
- 6 Permanent 12V input (Yellow)
- 7 12V ACC switched output to accessory (PINK)
- 8 D6 microprocessor output (not wired)
- 9 Ibus data wire (white)

Software updates:

From time to time, new features will be added, the module is easy to update at home via a computer. Instructions can be provided for those who wish to do that. It requires very little computer literacy, but support is there for anyone wishing to update the firmware. If the recommended USB cable was fitted during installation, it will only require a USB extension cable and a handy computer. Full instructions will be provided on request, plus any help that may be needed.

The latest version of software will be available on the AJL Electronics website for registered users to download at no cost, once registered for access. You can also have the software emailed to you, but remember that some free email providers like Google will block such attachments.

Note that to update the software, the ‘bike must be turned off and the handlebars locked. You will need a copy of Xloader.exe which is available with an internet search or from our website, free of charge. It is also available currently from <https://github.com/binaryupdates/xLoader>

You may also need to install a driver for the module, this is called **CH340G** or **CH341** and again is available with an internet search or download an easy installation program from the AJL website. Later versions of Windows MAY load it automatically though.

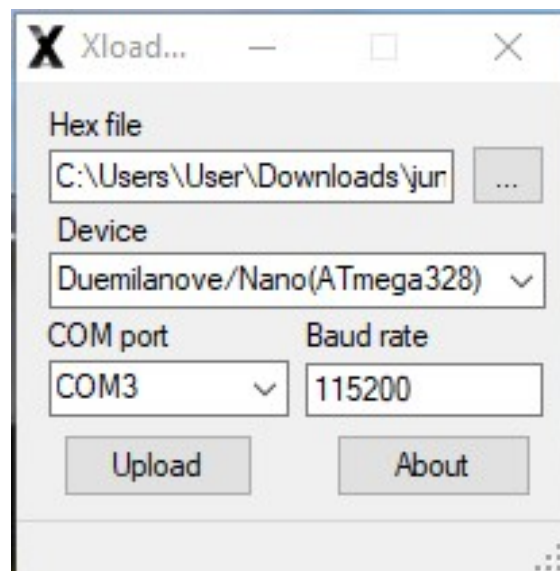
The driver can also be found here, <https://electropeak.com/learn/how-to-install-ch340-driver/> with an easy installation application. Reboot your computer after installing it.

To check if the driver has loaded, connect the module by USB and look in Windows DEVICE MANAGER. You should see a COM port with CH340G or 341 alongside it.

Settings for the Xloader application are: **Baud rate 115200**, Board type **Nano(ATmega328)**.

NB: Some module versions may need a Baud rate of 57600 to connect. <<<<<<<<<<<<<<

Navigate to your downloaded file, plug in the USB and press upload. The COM port should have automatically switched to the correct port number. If it doesn't seem to be recognised, you probably need to load the **CH340 341** driver manually and select the relevant COM port number.



Control mapping default:

As standard, the controls work in a logical way, much like the original operation subject to the limitations or idiosyncrasies of the radio installed. It cannot be identical due to the way that BMW arranged control of the factory radio. Some functions will vary especially with Sony radios.

These controls all work as per the original BMW radio..

Volume up

Volume down

Mute (Long press = **PLAY/PAUSE** on some radios, definitely Alpine.)

Seek+

Seek-

Stingray buttons:

These controls may vary, depending on the particular new radio fitted...

CD* (CC/CD) always operates as if you are pressing the Source button on the radio.

FM always operates as if you are pressing the Band button on the radio, except Kenwood FM+.

AM cycles through memory presets on some radios. When source is in USB Audio mode, it enables the repeat function on Alpine. On Kenwood, it is AM-.

TONE is used to activate the Voice function on a connected 'phone if the radio has that function. AUD on Kenwood. Or Alexa where the radio has that option.

MAN is used with Alpine to manually accept or reject an incoming call. Brief press to accept and long press to reject.

SCRIP is used to toggle the optional relay function for lights or PTT control.

ON always works as standard to put the stingray and radio in and out of standby.

MEM allows the display to be re-synchronised if need be. If the radio has been disconnected, a long press will synchronise the display with the radio. The radio needs to be in its power on startup configuration of source 1, band 1, preset 1, as if it had just been connected to power.

Future enhancements planned:

It is hoped that Speed controlled volume will be added to the software in the near future. Also more native compatibility with other radio brands will be added on demand. CD changer control is also now available once full testing has been completed.

Important notes concerning the limitations of the factory display:

As there is no physical connection between the radio and the display, it is not possible to show dynamic information. Scanning progress and channel names etc can not be displayed. Information that is displayed is based on expected behaviour from button presses. We know for instance that the sequence of source and band selections never changes, so the display simply shows the next one every time it sees the button operate.

It would be possible to alter the text to your preference, so for instance instead of the display "DAB Bnd1" it could read "Scala Radio". However if the station on that band is changed to another, the display will continue to read "Scala Radio".

I hope that you enjoy the benefits that this module brings and that you will tell others about it. If you have any questions, comments or complaints, please let us know and we will give as much personal support as required. Support is available by email, Messenger, Facetime or telephone 7 days a week as far as possible. There is no charge for this support.

WARRANTY:

The module is guaranteed against failure for a period of 12 months from date of shipping. In this time, a faulty module will be repaired or replaced free of charge. You will be responsible for the carriage cost to return it. Damage caused by the installation or use of the module outside its design parameters is not covered.

After 12 months, an estimate of repair cost will be provided once the module has been tested in our workshop. No claims for consequential loss will be entertained.

Note that installation of this module requires some electronics knowledge and soldering skills to rewire the new radio into the motorcycle. You are entitled to full support if doing it yourself, but we cannot be held liable for any problem or damage that occurs due to poor installation. **It is highly recommended that a “piggy back” wired test** is done to satisfy yourself that all is working, **before** cutting the BMW loom for the radio to be wired. **An optional “Plug and Play” adapter can be supplied at extra cost, for those who are not confident with the rewiring work required.**

Any questions or concerns, please get in touch, support response is available very quickly.

SOFTWARE:

The software is supplied without warranty of any sort and is provided to suit only the radio and motorcycle declared when purchasing the module. Any bugs found should be reported back and they will be given attention as soon as time allows. From time to time, new versions will be released to address bugs or to incorporate enhancements. These updates are provided free of charge and are available for download from our website. You will need to register an account to access the Ibus owner's protected area.

Optional accessory instructions:

Plug and Play loom adapter:



The Plug and play adapter.



How it is all plugged in.

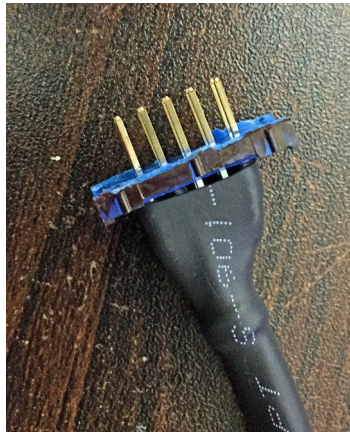


BMW adapter plug.

This loom adapter allows the new radio and the Ibus module to be installed without modifying the BMW loom. Fitting it is fairly self explanatory, as the connectors are all different. The accessory switch connections etc are available by removing the heatshrink which insulates the wire ends.



CD Changer loom add on.



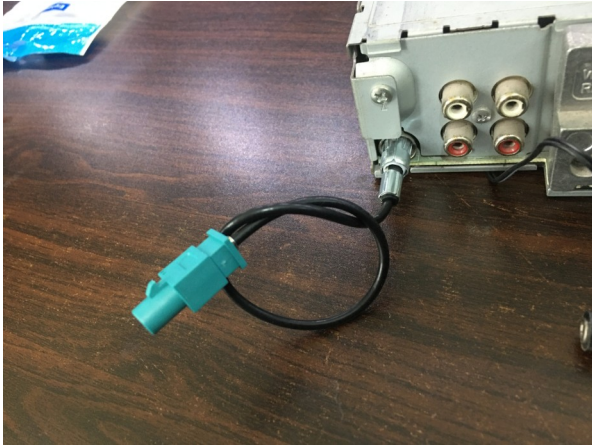
This is an option to keep the original 6 CD changer in use. It consists of two plugs, a multi pin plug for the original changer loom and a stereo Aux type plug.

Connect the multi pin plug into the original socket from the CD changer. This is not a polarised plug so it **must** be mounted in the correct orientation. Two of the pins carry 12V so if it isn't to be used, then it should be insulated.

If the CD changer is not going to be used, the pictured silver right angled connector can be removed from the large BMW connector housing, together with its short length of cable and the oval shaped grey socket at the left side of the stingray.

Aerial adapter:

The BMW K1200LT uses one of two types of aerial connector. The original cassette radio has a DIN connector, the CD radios are a Fakra. Therefore you will need to convert to the ISO plug as used in most aftermarket radios.



The Fakra adapter to ISO.



The DIN adapter to ISO.



DAB/FM splitter unit for Facelift K1200LT.



DAB/FM splitter, adaptable with DIN/ISO or a Fakra adapter plug as shown above.

The Fakra adapter and the DIN/ISO is also available as a one piece adapter like these, either the fixed or the flexible version will be suitable for the job of converting the aerial connector to suit the 'bike.



Contact information:

This device and its software are manufactured and exclusively sold worldwide by:

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Gloucester
GL1 5SR UK
+44 1452 311031**

module24@ajlelectronics.co.uk

**(c) 2024
Troubleshooting guide**

Not working at all:

Check that you can see the red LEDs through the case of the module. They should be fairly bright.

No red LEDs:

No ignition switched power to the radio. Have you turned on the ignition and pressed **ON** on the stingray? You might have to bring the radio out of standby manually too.

Red LEDs lit:

You have ignition power. What is in the display of the K1200LT?

Nothing in the display. 40 seconds later, you see "NO RADIO".

The module is not seeing a valid IBUS signal on its white wire. Check your connections. Inside the module is a blue LED which should flicker from time to time and every time you operate a control if the IBUS signal is present. You will also see the red LEDs flicker.

Partially working:

Display and radio are out of sync.

Set the radio manually to its first tuner source and then press and hold MEM on the stingray controller until the display resets to its source 1 (depends on the radio and could be FM1, DAB1 etc).

Controls and display all work but no radio controls function.

For IR blaster version, try moving the IR blaster eye around and across the radio panel until you find the most reliable and convenient position. Fix it there.

For SWC type radios, is the 3.5mm cable properly connected both ends? Does the radio need to be configured to use SWC? Have you plugged it into MIC instead of SWC?

Display and radio sync but show the wrong sources.

Module may not have the correct firmware to suit your radio. Please get in touch and if necessary a new firmware version can be emailed to you.

Display and radio keep losing sync.

You may be making control operations too quickly. In particular with Sony radios, it takes a few moments for the radio to acknowledge a control input, so you need to pause between control button presses.