# G2 Upgrade to faster processor

An attractive upgrade approach is to a Radxa CM5 module. This would result in a processor faster than a Raspberry pi CM5 but it comes with some issues. At least some of the GPIO seems to be 1.8V logic which will affect front panel operation. For a future factory radio that can be worked around, but what about in-service upgrades for existing radios?

I think there are 3 different cases to consider; no front panel, G2V1 front panel and G2V2 front panel.

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| **Front?** | **Before upgrade** | **Upgrade Implications** |
| None | Power switch and power LED driven by circuit on the preamp board. Preamp board wired to the Saturn 40 pin header. | Minor change around the power switch required. |
| G2V1 | Power switch not connected to the pi.  Encoders and pushbuttons directly wired to GPIO pins on Saturn.  Display powered by 5V from 40 pin ribbon cable. | Add an adapter board; possibly using the Waveshare RP2040-piZero, or Arduino on a suitable carrier. RP2040 would mean a change of serial device name.  Potentially backwire any changes to power SW and LED if “soft” start needed.  Provide a 5v power feed to the display (possibly direct from the pi 40 pin connector)  VFO encoder is marginal on 5v; may need 12V power feed from J19 on front panel board. |
| G2V2 | Power switch wired directly to GPIO pins on Saturn. Power switch LED driven by GPIO pins on Saturn.  Encoders and pushbuttons interfaced to an Arduino on the display PCB, with serial connection to the CM4 board via a 5V to 3.3V level shifter. | Level shift needs to change to 1.8V  Power button and power LED changes?  Minor plug-on adapter required??  Long term – simple change to front panel PCB to provide the level shift to 1.8V and any changes for the power button and LED. |
| both | It is also potentially possible to use USB serial, with the penalty that the device name may vary depending on what else is plugged in. | |

The end state would be that any upgraded board had the Andromeda-like serial messaging for front panel controls. Unclear as yet what the serial port ID would be.

So the required modifications would be:

A diagram of a computer

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