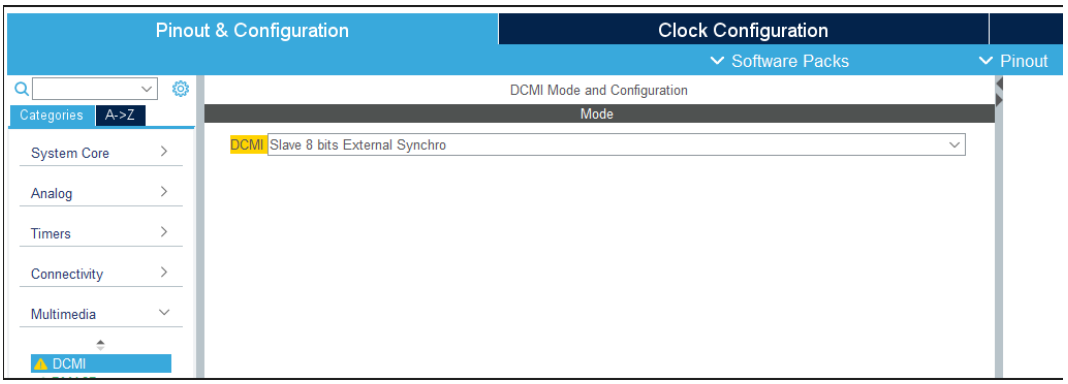
Configure the DCMI module on a STM32f746G-Discovery guide

1. Open a new STM32F746G-DISCO project from the STM32CubeIDE Board Selector.
2. In the *Pinout & Configuration* in the multimedia tab, select DCMI
3. Make sure that DCMI "*Slave 8 bits External Synchro*" is selected.



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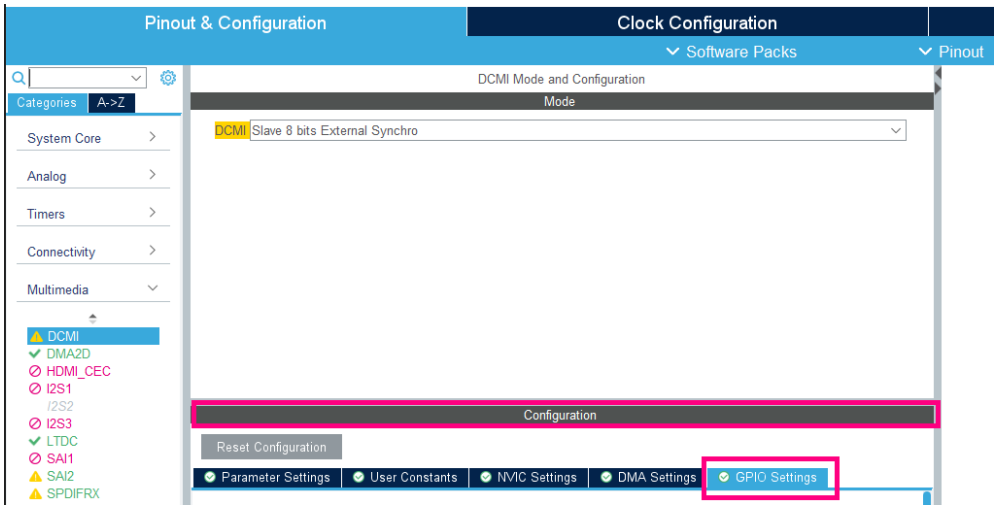
4. Select the *Configuration* tab and select *GPIO settings* tab.



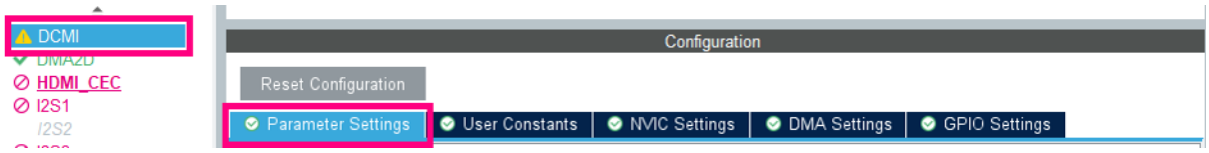
5.

6. Select all the DCMI pins

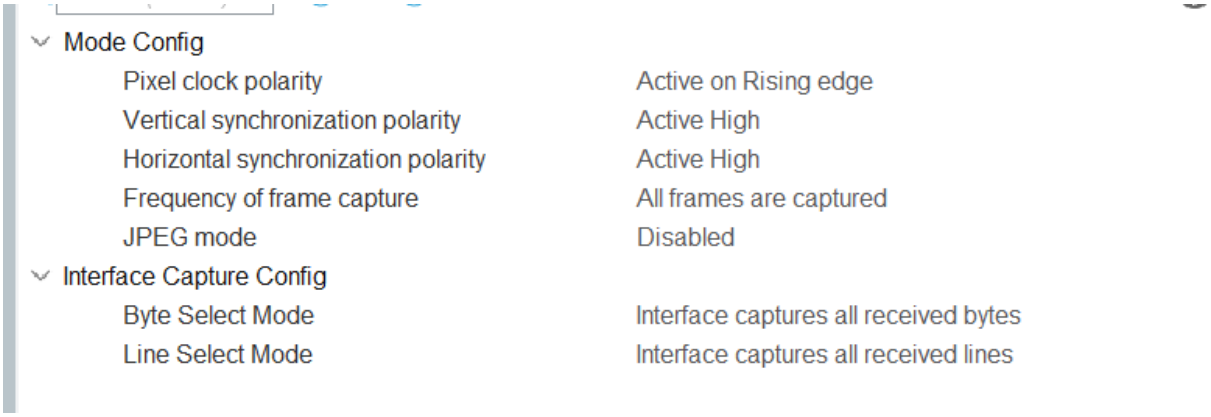
Pin Name	Signal on Pin	GPIO output l...	GPIO mode	GPIO Pull-up/...	Maximum out...	User Label	Modified
PA4	DCMI_HSYNC	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_HSYNC	☑
PA6	DCMI_PIXCLK	n/a	Alternate Fun...	No pull-up an...	Low		☐
PD3	DCMI_D5	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D5	☑
PE5	DCMI_D6	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D6	☑
PE6	DCMI_D7	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D7	☑
PG9	DCMI_VSYNC	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_VSYNC	☑
PH9	DCMI_D0	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D0	☑
PH10	DCMI_D1	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D1	☑
PH11	DCMI_D2	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D2	☑
PH12	DCMI_D3	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D3	☑
PH14	DCMI_D4	n/a	Alternate Fun...	No pull-up an...	Low	DCMI_D4	☑

7. Set the GPIO pull-up/pull-down to "No pull-up and no pull-down

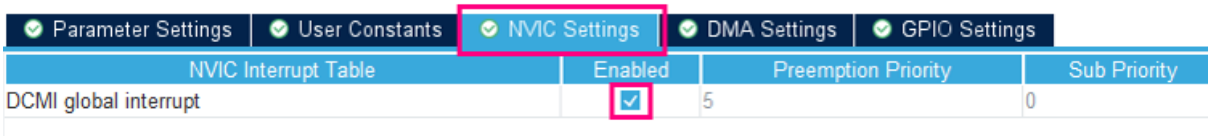
8. Select Parameter settings



9. Set the configurations like in the picture

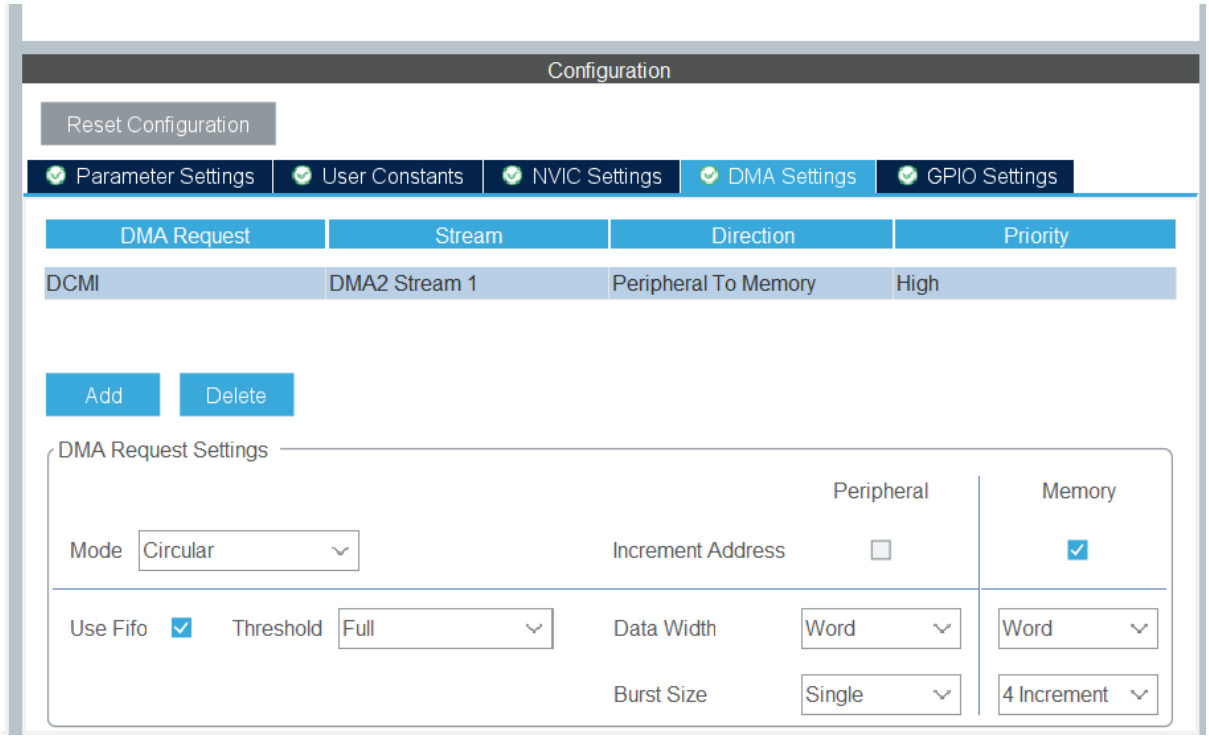


10. Enable the DCMI global interrupt in the *DCMI* Configuration window

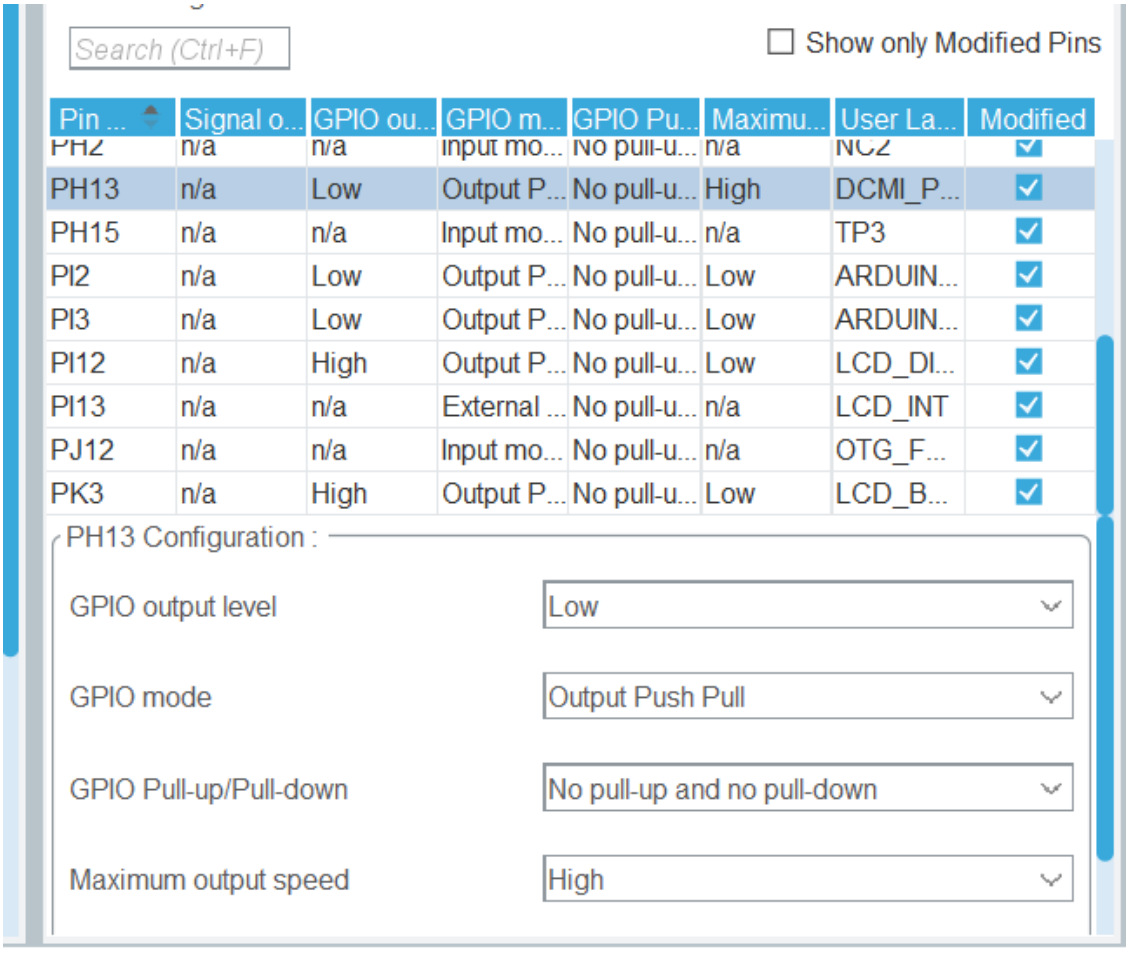


11. Go the the DMA settings

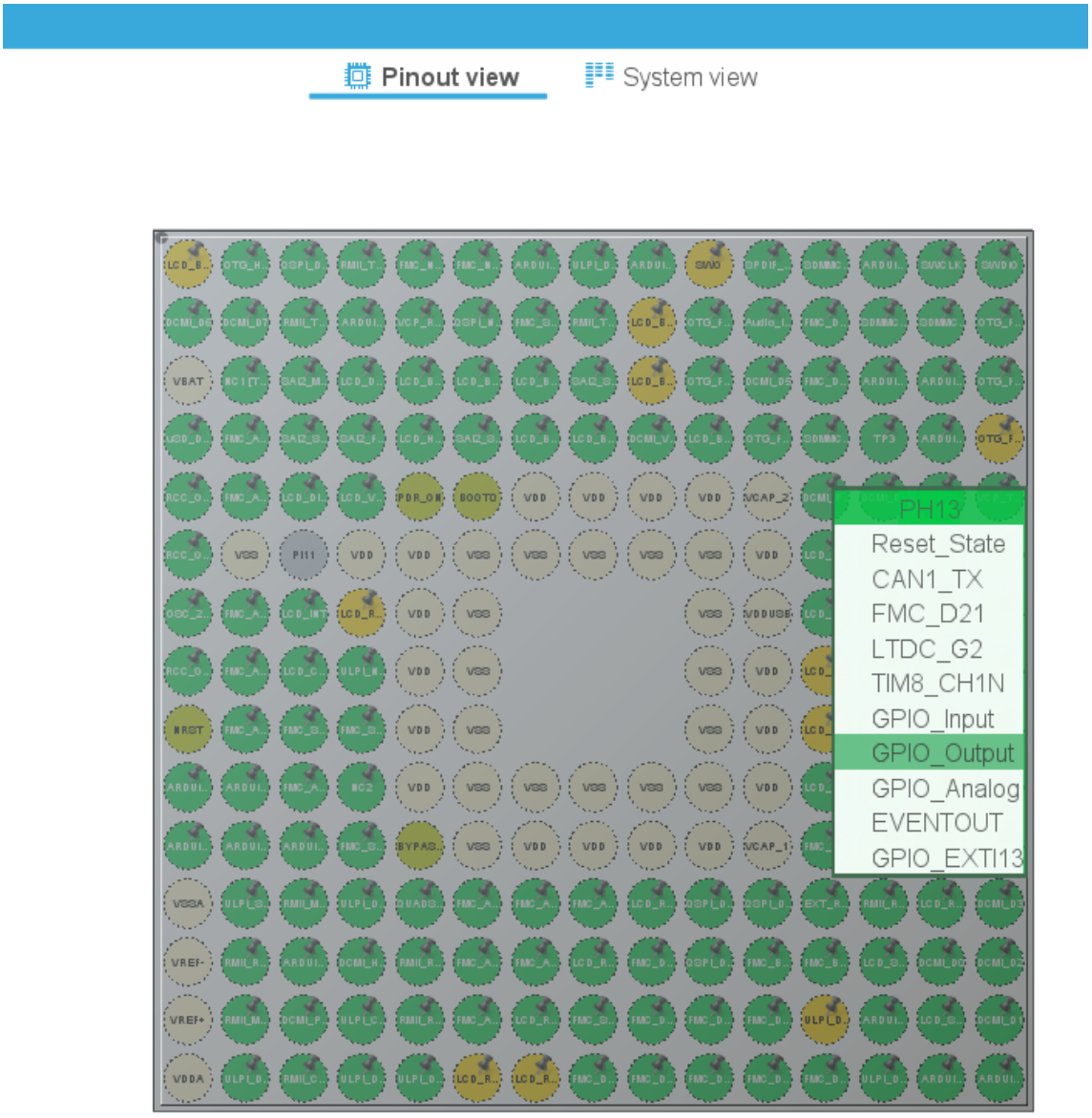
12. Choose DCMI and copy the configuration below



13. Go to GPIO in System Core and copy the following configuration for PH13



Note: if PH13 doesn't appear, make sure that it's set to GPIO output in the Pinout View like the following picture:

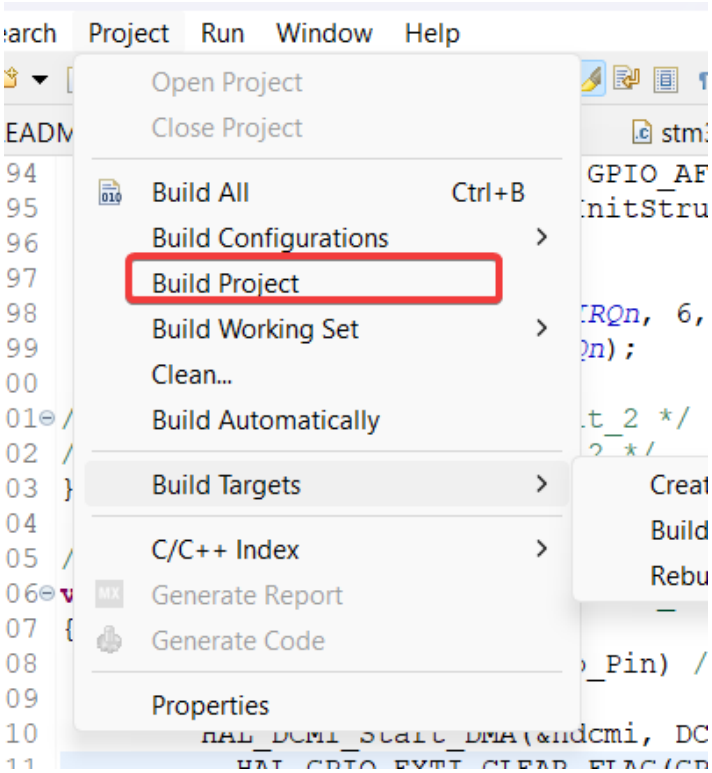


TFBGA216 (Top view)

14. The configuration step is complete, now we have to add some files to the project.

15. Go to `C:\Users\YOUR_USER\STM32Cube\Repository\STM32Cube_FW_F7_V1.xx.0\Drivers\BSP`
16. Copy from the \STM32746G-Discovery folder the following files and add them to the Core/Src folder of your project:
    - `stm32746g_discovery.c`
    - `stm32746g_discovery_sdram.c`
17. From the same folder, add the following files in the Core/Inc folder of your project:
    - `stm32746g_discovery.h`
    - `stm32746g_discovery_sdram.h`

18. Copy the `ov5640.c` and `ov5640.h` from the BSP\Components folder and add them into the Core\Inc and Core\Src file respectively
19. Copy `camera.h` from the BSP/Component\Common folder to the Src/Inc folder
20. Modify `ov9655.h` by replacing `#include "../Common/camera.h"` by `#include "camera.h"`
21. Copy `fonts24.c` from BSP\Utilities\Fonts folder to the Src folder.
22. Build the project and make sure that there are no errors or warnings



23. Go to the `main.c` file and copy the code between the comments indicated in boilerplate.txt. Search for the USER CODE BEGIN in the `main.c` and paste the corresponding USER CODE BEGIN from `boilerplate.txt`