

Synerduino STM Fork of INAV and the Synerduino Target

Synerduino STM Target Compilation into Hexfile Download the INAV Release 5.1.0 Release 6.0.0 Release 7.0.0

First you need to download the INAV release version

These are available in the official github page or Synerflight SynerduinoSTM in download tab

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INAV–7.0.0 Download the Xpack Release 10.3.1-2.2-Win32-x64

These are available in the official github page or Synerflight SynerduinoSTM in download tab



https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/

https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v9.2.1-1.1/xpack-arm-none-eabi-gcc-9.2.1-1.1-win32-x64.zip https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v10.2.1-1.1/xpack-arm-none-eabi-gcc-10.2.1-1.1-win32-x64.zip https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v10.3.1-2.2/xpack-arm-none-eabi-gcc-10.3.1-2.2-win32-x64.zip After installation Go Create a Workspace folder in your local Drive in my case Drive E, and extract and place the following directories INAV-5.1.0 / INAV-6.0.0 / INAV-7.0.0 Folder, Xpack folder



Note: I place my Workspace Folder on Drive E: as I was using SSD on my Drive C so not to fill it up

Create new folder inside INAV 5.1.0 INAV 6.0.0 INAV 7.0.0 Directory and Name it build



Inside the Xpack Folder Extract the xpack-arm-none-eabi-gcc -10.2.1-1.1

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Create an xplack folder in Workspace folder and place it in there

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Download the Synerduino Target Folder and Extract to Local drive and place it in the following (E/Workspace/inav-5.1.0/scr/main/target) (E/Workspace/inav-6.0.0/scr/main/target) (E/Workspace/inav-7.0.0/scr/main/target)

Readme file is also available in the download System_stm32f4xx.c – is modify to suit the Synerduino STM INAV 7.0.0 when F411 BP became official)

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Other Download of the Synerduino Target Folder is the sensor driver this is also Extract to Local drive and place it in the following

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(E/Workspace/inav-6.0.0/scr/main/drivers/accgyro),

(E/Workspace/inav-7.0.0/scr/main/drivers/accgyro)

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Readme file is also available in the download (accgyro_BMI160) is also modify to use with the SynerduinoSTM shield

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General Info

This is a guide on how to use Windows MSYS2 distribution and building platform to build iNav firmware. This environment is very simple to manage and does not require installing docker for Windows which may get in the way of VMWare or any other virtualization software you already have running for other reasons. Another benefit of this approach is that the compiler runs natively on Windows, so performance is much better than compiling in a virtual environment or a container.

Download Arm Embedded GCC toolkit from The xPack Project

https://xpack.github.io/arm-none-eabi-gcc/

Download MSYS2 for your architecture (most likely 64-bit)

https://www.msys2.org/wiki/MSYS2-installation/

Install and Run msys2-x86



Copy and paste this script to install Ruby ,Cmake , Make and Gcc



pacman -S git ruby make cmake gcc mingw-w64-x86_64-libwinpthread-git unzip wget

Y to Proceed installation

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<pre>:: Proceed with installation? [Y/n] (8/8) checking keys in keyring (8/8) checking package integrity (8/8) loading package files (8/8) checking for file conflicts (8/8) checking available disk space :: Processing package changes (1/8) reinstalling git (2/8) reinstalling ruby (3/8) reinstalling make (4/8) reinstalling make (5/8) reinstalling cmake (5/8) reinstalling gcc (6/8) reinstalling mingw-w64-x86_64-libwinpthread-git (7/8) reinstalling unzip (8/8) reinstalling wget :: Running post-transaction hooks (1/1) Updating the info directory file</pre>		100% 100% 100% 100% 100% 100% 100% 100%
CRKDELL @DESKTOP-EP78HAE MSVS ~		

pacman -S git ruby make cmake gcc mingw-w64-x86_64-libwinpthread-git unzip wget

Set a Path for the Exported GCC to the Environment PIs make sure the directory is same name as the folder

INAV 5.1.0

INAV 7.0.0

₩ ~	— C) X
:: Proceed with installation? [Y/n]		/
(8/8) checking keys in keyring	[######################################	#] 100%
(8/8) checking package integrity	[######################################	ŧ] 100%
(8/8) loading package files	[######################################	#] 100%
8/8) checking for file conflicts	[######################################	#] 100%
8/8) checking available disk space	[######################################	ŧ] 100%
: Processing package changes		
(1/8) reinstalling git	[######################################	#] 100%
2/8) reinstalling ruby	[######################################	ŧ] 100%
3/8) reinstalling make	[######################################	ŧ] 100%
4/8) reinstalling cmake	[######################################	#] 100%
5/8) reinstalling gcc	[######################################	ŧ] 100%
6/8) reinstalling mingw-w64-x86_64-libwinpthread-git	[######################################	ŧ] 100%
7/8) reinstalling unzip	[######################################	ŧ] 100%
8/8) reinstalling wget	[#####################################	ŧ] 100%
: Running post-transaction hooks		
(1/1) Updating the info directory file		
BKDELL@DESKTOP-FP/8HAF MSYS ~		
<pre>export PATH=/e/Workspace/xpack/xpack-arm-none-eabi-gcc-</pre>	-10.2.1-1.1/bin:\$PATH	
.0 export PATH=/e/Workspace/xpack/xpack-arm-r	ione-eabi-gcc-10.2.1-1.1/bin:\$PAT	н
· · · ·	-	
0 ovport DATH=/o/Morkepeee/vpeek/vpeek/vpeek	2000 000 10 2 1 2 2/hin. CDAT	·u
······································	ione-eabi-gcc-10.3.1-2.2/bin.3PAT	

get the toolkit version you need for your INAV version

for INAV version 5.0.0, 5.1.0, 6.0.0 toolchain version needed is 10.2.1

for INAV version 7.0.0, 7.1.0 toolchain version needed is 10.3.1



Source the version number that needs to be downloaded

Go to Xpack directory by typing

cd /e/Workspace/xpack

cat /e/Workspace/inav-7.1.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2

cat /e/Workspace/inav-7.0.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2

cat /e/Workspace/inav-7.0.0-RC1/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2

cat /e/Workspace/inav-5.1.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2

cat /e/Workspace/inav-6.0.0/cmake/arm-none-eabi-checks.cmake | grep "set(arm_none_eabi_gcc_version" | cut -d\" -f2

Go to the build directory by entering this command

M /e/Workspace/inav-6.0.0-FP1/build	_	×	cd ,
CBKDELL@DESKTOP-FP78HAF_MSYS ~ \$ cd /e/Workspace/inav-6.0.0-FP1/build			cd
CBKDELL@DESKTOP-FP78HAF MSYS /e/Workspace/inav-6.0.0-FP1/build \$			cd
			ca
		\sim	

cd /e/Workspace/inav-5.1.0/build

cd /e/Workspace/inav-6.0.0/build

cd /e/Workspace/inav-7.0.0-RC1/build

cd /e/Workspace/inav-7.0.0/build

cd /e/Workspace/inav-7.1.0/build

This will extract the Cmake into the build folder creating the Environment

M /e/Workspace/inav-6.0.0-FP1/build	_		\times
CBKDELL@DESKTOP-FP78HAF MSYS /e/Workspace/inav-6.0.0-FP1/build \$ export PATH=/e/Workspace/xpack/xpack-arm-none-eabi-gcc-10.2.1-1.1/bin:\$PATH			
CBKDELL@DESKTOP-FP78HAF MSYS /e/Workspace/inav-6.0.0-FP1/build			
found arm-none-eabi-gcc 10.2.1 at /e/Workspace/xpack/xpack-arm-none-eabi-gcc-10.2	.1-1.1/	/bin/ar	m−n
The C compiler identification is GNU 10.2.1			
The CXX compiler identification is GNU 10.2.1 Detecting C compiler ABI info			
Detecting C compiler ABI info - done Check for working C compiler: /e/Workspace/xpack/xpack-arm-none-eabi-gcc-10.2.1-1	.1/bin/	/arm-no	ne-
eabi-gcc.exe - skipped Detecting C compile features			
Detecting C compiler ABI info			
Detecting CXX compiler ABI info - done	1 1 1	• ,	
Check for working CXX compiler: /e/workspace/xpack/xpack-arm-none-eabi-gcc-10.2.1 e-eabi-g++.exe - skipped	-1.1/b1	in/arm-	non
Detecting CXX compile features Detecting CXX compile features - done			
The ASM compiler identification is GNU	ne-eab	i-acc e	Xe
toolchain: arm-none-eabi, WARNINGS_AS_ERRORS: OFF	ne cab	r geere	AC.
DEBUG_HARDFAULTS: OFF, SEMIHOSTING: OFF			
			N 1



You may need to run rm -rf * in build directory if you had any failed previous runs now run cmake

This will build the Hexfile Targeted the Synerduino board and its settings to the Build Folder the Hexfile is use as Firmware when loading the configurator



INAV6

make SYNERDUINOSTM

make SYNERDUINOSTM2

make SYNERDUINOSTMSV

make SYNERDUINOSTMSV2

INAV7 | make SYNERDUINOSTM_F411

Once completed the Hexfile can be found on the Build folder

M /e/Workspace/inav-6.0).0-FP1/build				-	_		×
/ibus_shared.c.obj Building C object sr /ibus_c obj	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	5V.elf.dir/_	_//	telemet	ry ^
Building C object sr /ltm c obj	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	5V.elf.dir/_	_//	telemet	ry
Building C object sr /maylink.c.obi	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	SV.elf.dir/_	_//	telemet	ry
Building C object sr /msp shared.c.obi	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	SV.elf.dir/_	_//	telemet	ry
Building C object sr /smartport.c.obi	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	SV.elf.dir/_	_//*	telemet	ry
Building C object sr /sim.c.obi	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	5V.elf.dir/_	_//*	telemet	ry
Building C object sr /telemetry.c.obi	c/main/target/	SYNERDUINOS	TMSV/CMakeFi	es/SYNERDUINOSTM	5V.elf.dir/_	_//*	telemet	ry
Linking C executable Memory region	///b Used Size R	oin/SYNERDUI Region Size	NOSTMSV.elf %age Used					
FLASH:	1108 B	16 KB	6.76%					
FLASH_CONFIG:	0 GB	16 KB	0.00%					
FLASH1:	458570 B	480 KB	93.30%					
RAM:	92056 B	128 KB	70.23%					
MEMORY_B1:	0 GB	0 GB						
Built target SYNERDU	INOSTMSV.elf							
Built target SYNERDU	INOSTMSV							
CBKDELL@DESKTOP-FP78	HAF MSYS /e/Wo	orkspace/ina	v-6.0.0-FP1/	build				
\$								\sim

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File Home Share V	liew
$\leftarrow \rightarrow \checkmark \uparrow \downarrow \rightarrow$ This PC	> Local Disk (E:) > Workspace > inav-6.0.0-FP1 > build >
🖈 Quick access	in bin
build	CMakeFiles
SynerduinoSTM hex INA	SynerduinoSTM hex INAV 6.0.0
SYNERDUINOSTMSV	SynerduinoSTM Target INAV 6.0.0
SYNERDUINOSTMSV	cmake_install.cmake
	CMakeCache.txt
OneDrive - Personal	inav_6.0.0_SYNERDUINOSTMSV.hex
Documents	Makefile
Pictures	Synerduino DIFF 6.0.0.txt
, This PC	
👆 3D Objects	
늘 Desktop	

And... its here .

INAV_5.1.0 SYNERDUINOSTM.hex INAV_5.1.0 SYNERDUINOSTMSV.hex INAV_6.0.0_SYNERDUINOSTM.hex INAV_6.0.0_SYNERDUINOSTMSV.hex INAV_7.0.0_SYNERDUINOSTM_F411.hex

Open this file in the Configurator as this is the firmware Find it in the Build folder of the INAV directory

cd /e/Workspace/inav-5.1.0/build

cd /e/Workspace/inav-6.0.0/build

cd /e/Workspace/inav-7.0.0/build

cd /e/Workspace/inav-7.1.0/build