

[English] GenX320Example Software Setting, Usage Guide

Model: GenX320Example (V.1.0.0)

This document is a software setup and usage guide for the sample application GenX320Example created for the STM32H747I-DISCO STMicroelectoronics (hereinafter referred to as STM) connected to an event-based camera module (GX3M-4x5S).

1 Software Setting Guide

We will use STM32CubeIDE from STM. If it is not installed on your PC, please visit the STM website. <u>https://www.st.com/en/development-tools/stm32cubeide.html#get-software</u> Please download and install.

The following is an explanation for the Windows version assuming the source is extracted to %HOMEPATH%¥STM32CubeIDE¥CenturyArks01¥. Unzip the sample application source, GenX320ExampleV100.zip, and place it in %HOMEPATH%¥STM32CubeIDE¥CenturyArks01¥GenX320Example¥ .

1.1 Import source

...¥GenX320Example¥STM32CubeIDE¥.project

This is the project file. In Explorer, go to

...¥GenX320Example¥STM32CubeIDE¥, and



You will be asked for the location of the workspace, so specify

%HOMEPATH%¥STM32CubeIDE¥CenturyArks01

one level above the source home, and click [Launch].



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| Start a project | Welcome to STM32CubeIDE | Support & Community |
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"STM32CubeIDE Home" screen will appear, but if you wait, the import process will begin as shown above.



After a few minutes, the "Successfully imported" screen will appear and the import process will be complete.



1.2 Connect STM32H747I-DISCO

Insert a USB cable into CN2 (ST-Link V3) of the STM32H747I-DISCO and connect it to your PC.

Depending on the state of the STM32H747I-DISCO, you may be prompted to update the ST-Link. If this happens, upgrade with the default settings.

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| STLINK-V3 | Refresh device list | 3 | |
| ST-Link ID: •(\$9000)E(0) 80(0)(20)(1) | R | eleasing your creativity | |
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| Type: STM32 Debug+Mass storage+VCP | | | |
| Change Type | | | |
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| MCO Output: | Ooff | | |
| Version: V&LIE%4 | | | |
| Update to Firmware: V3J13M4 STM32 Debu | g+Mass storage+VCP | | |
| Upgrade (2) | | | |
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1.3 Compile and Run

The STM32H747 has dual cores, CM7 and CM4, each of which executes a different program. The execute files for CM4 and CM7 are sent separately, so you performed twice almost similar operations.

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In "Project Explorer", click DCMI_CaptureMode_CM4 to select it (1), and then click Run (2).



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The first time you do this, the "Edit launch configuration properties" screen will open, but there is no need to edit, so just click [OK].

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Shutting down...

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appears within a few minutes, everything is working properly.



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In "Project Explorer", click DCMI_CaptureMode_CM7 to select it ①, and then click Run ②. (This is very similar to the previous one, but this time it's for CM7.)

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| Enable auto build Use workspace settings | O Disable auto build <u>Configure Workspace Settings</u> | | | |
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The first time you do this, the "Edit launch configuration properties" screen will open, but there is no need to edit, so just click [OK].



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If the message

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appears within a few minutes, everything is working properly.

The STM32H747I-DISCO display should show

"CenturyArks GenX320 Example Application".

At this point, the application has been loaded into the STM32H747I-DISCO, so you can unplug the USB cable from the PC. If you are not rewriting the application after this, the USB cable will work even if you connect it to simple USB power source (instead of the PC's USB port).



2 Application software usage guide

There is no power switch, so simply connect the USB cable to a power source and it will start up and you will see a menu screen like this.



Reset SW is the CPU Reset Switch.

ColorSelect SW is a switch that changes the color of negative events during operation, and also serves to switch the Bias setting. JOYSTICK has five different controls (abbreviated character): up (U), down (D), right (R), left (L) and push(Push).

You can select the mode with the U, D, R, L on the JOYSTICK and start with a push, but modes other than [General mode] are for reference only and are not guaranteed to work.



The following is an explanation of [General mode].



This is the screen in operation.

The ColorSelect SW and JOYSTICK Function are as follows.

| NegativeEventColor | | | JOYSTICK Function |
|--------------------|---------------------|----------------------|-----------------------------|
| Green | U,D,R,L : Display D |)irection, | Push : Display MirrorToggle |
| Blue | U,D : Bias fo, | R,L : Bias hpf, | Push : |
| Cyan | U,D : Bias diff_on, | R,L : Bias diff_off, | Push : |
| Red | U,D : Bias refr, | R,L :, | Push : |

Items on the bottom line

Time: is the current timestamp

Err: is the number of times the timestamp went backwards (probably a communication problem)

Warn: is the number of times the timestamp interval exceeded 200mS

mirror / normal

0, 90, 180, 270 deg (Rotate degree)

Manufacturer: CenturyArcs Co., Ltd. Location: 3-13-1 Nishi-Azabu, Minato-ku, Tokyo 106-0031 TEL: +81-3-6804-5752 Web site: <u>https://www.centuryarks.com/</u> Product Inquiries Email: <u>ca-qa@centuryarks.com</u>



[Japanese] GenX320Example ソフトウェアセッティング・使用ガイド

製品名:GenX320Example (V.1.0.0)

本書は、イベントベースカメラモジュール(GX3M-4x5S)を接続した STM32H747I-DISCO STMicroelectoronics 社(以下、 STM 社)用に作成したサンプルアプリ GenX320Example のソフトウェアセッティング・使用ガイドです。

1 ソフトウェアセッティングガイド 1.0 準備

STM 社の STM32CubeIDE を使用します。PC にインストールされていない場合は、STM 社の Web ページ <u>https://www.st.com/ja/development-tools/stm32cubeide.html#get-software</u> から、ダウンロードして、インストールしてください。

以下は、Windows版で、%HOMEPATH%¥STM32CubelDE¥CenturyArks01¥ にソースを展開した場合の説明になります。 サンプルアプリのソース、GenX320ExampleV100.zip を解凍し、 %HOMEPATH%¥STM32CubelDE¥CenturyArks01¥GenX320Example¥ となるように配置してください。

1.1 ソースインポート

・・・¥GenX320Example¥STM32CubeIDE¥.project が、プロジェクトファイルになります。 エクスプローラーで、・・・¥GenX320Example¥STM32CubeIDE¥ に移動し、

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| CM7 | | 2025/02/21 10:49 | ファイル フォルダー | |
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| Select a directory | as workspace | | | |
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"STM32CubelDE Home"の画面になりますが、そのまま待っていると上記のようにインポート処理が始まります。



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1.2 STM32H747I-DISCO の接続

STM32H747I-DISCOのCN2(ST-Link V3)にUSBケーブルを挿してPCに接続します。

STM32H747I-DISCOの状態により、ST-Link の Update をうながされる場合があります。 その場合は、Default 設定で、Upgrade してください。

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| Current Firmware: | | | | |
| Type: STM32 Debug+Mass storage+VCP | | | | |
| Change Type | | | | |
| | Default (HSI/2 8MHz) | O HSE | /3 (8.33MH | lz) |
| MCO Output: | Ooff | | | |
| Version: V&LEM4 | | | | |
| Update to Firmware: V3J13M4 STM32 De | bug+Mass storage+VCP | | | |
| Upgrade (2) | | | | |

1.3 コンパイルと Run

STM32H747 は、CM7, CM4 のデュアルコアで、それぞれ別のプログラムを実行します。CM4 用と CM7 用のプログラムは、別々に送り込みますので、類似の操作を2回行います。

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Project Explorer で、DCMI_CaptureMode_CM4 をクリックして選択した状態 ① で、Run ② をクリックします。



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| Build Configuration: Select Automatically | | | | ~ |
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| | | FLASH | 0x08100000 | 0x081fffff | 1024 KB |
| | | CAIVI | 0x1000000 | 0x10047fff | 200 ND |
| | Download verified successfully | | | | |
| | Shutting down Exit. | | | | |
| | ٢ > | | | | > |
| DCMI_CaptureMode_CM7 | | <u>&</u> | | | |

Project Explorer で、DCMI_CaptureMode_CM7 をクリックして選択した状態 ① で、Run ② をクリックします (先ほどとよく似ていますが、今回は CM7 の方です)

| Edit Configuration | | | _ | | × |
|--|---------------------------------------|---|----------------|--------|---|
| Edit launch configurat | on properties | | | | |
| Name: DCMI_CaptureMa | de_CM7 • Startup 🔤 Source 🔲 Common | | | | |
| Project: DCMI_CaptureMode_Cf | 17 | | | Browse | |
| C/C++ Application: Debug/DCMI_CaptureN | ode_CM7.elf | | Search Project | Browse | |
| Build (if required) before Build Configuration: | re launching Select Automatically | | | ~ | |
| Enable auto build Use workspace setti | ngs | O Disable auto build <u>Configure Workspace Settings</u> | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | Revert | Apply | |
| ? | | | OK | Cancel | |

初回は、「Edit launch configuration properties」の画面が開きますが、編集不要ですので[OK]をクリックしてください。



| CenturyArks01 - STM32CubelDE | | | | - | |
|--|--|--|---|--|--|
| ile Edit Source Refactor Navigate S | earch Project Run Window Help 💄 Hello Tomoharu | | | | |
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| | | | | 4 | . : 853 2 |
| Project Explorer X | | | - 0 | E Ou × ◎ B | u 🗖 (|
| GenX320Example (in STM32CubelDE) > ∰ CCML_CaptureMode_CM4 (in CM4) > ∰ DCML_CaptureMode_CM7 (in CM7) | | | | There is no active e provides an outline | ditor that |
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| | Problems Tasks Console X Properties To Starks Console X Properties Cerminated> DCM_CaptureMode_CM7 (STM32 C/C++ Application) ST File download complete Time elapsed during download operation: 00:00:01.12 | Build Analy × DCML_CaptureMc /DCML_CaptureM | Static | :k (2) Cyclomati Dug - Feb 21, 202 | c = E 2 25, 10:41:33 |
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数分で、

Download verified successfully Shutting down... Exit. となれば、正常です。

ここで、STM32H747I-DISCOのディスプレイに、 「CenturyArks GenX320 Example Application」 が表示されているはずです。 この時点で、 STM32H747I-DISCOに、アプリケーションが入りましたので、PC から USB ケーブルを抜いても問題ありません。

この後は、アプリケーションの書き換え等を行わないのであれば、 USB ケーブルは、(PC の USB ポートでなく)USB 電源に接続しても動作します。



2 アプリケーション使用ガイド

電源スイッチはありませんので、USB ケーブルを電源に接続すると起動し、このような、メニュー画面になります。



Reset SW は、CPU Reset Switch です。

ColorSelect SW は、動作中に、ネガティブイベントの色を変更する Switch で、Bias 設定の切り替えを兼ねます。 JOYSTICK は、上(U)、下(D)、右(R)、左(L)、押(Push)、の5種類(画面上の略記)の操作ができます。

JOYSTICK の U,D,R,L で、mode を選択し、Push で開始することができ、ますが、 [General mode] 以外は、動作無保証の参考モードです。



以下は、[General mode]の説明です。



動作中の画面です。

ColorSelect SW と JOYSTICK Function は、以下の通りです。

| NegativeEventColor | JOYSTICK Function | | | | |
|--------------------|------------------------------|----------------------|-----------------------------|--|--|
| Green | U,D,R,L : Display Direction, | | Push : Display MirrorToggle | | |
| Blue | U,D : Bias fo, | R,L : Bias hpf, | Push : | | |
| Cyan | U,D : Bias diff_on, | R,L : Bias diff_off, | Push : | | |
| Red | U,D : Bias refr, | R,L :, | Push : | | |

最下行の項目

Time: は、タイムスタンプ Err: は、タイムスタンプが逆行した回数(通信上の問題が起きた可能性が高い) Warn: は、Timestampの間隔が 200mS を超えた回数 mirror / normal 0, 90, 180, 270 deg (Rotate degree)