

## STM32F7 CAMERA DEVELOPMENT KIT

### VIDEO SOLUTIONS FOR IOT, HOME AUTOMATION AND VIDEO APPLICATIONS

Avnet Silica, expert in vision solutions, provides a low-cost and flexible tool for video applications with the STM32 Cortex<sup>®</sup>-M7 microcontroller. TD next miniature camera modules interface with the STM32F7 for VGA quality or lower resolution video. The TD next camera modules distinguish by delivering high-quality specs with long lifetime availability.

The STMicroelectronics Cortex-M7 Camera Development Kit includes all hardware and software to build your own application and reduce development time significantly. The camera driver is included as well as an example application to capture and display video.



### ST STM32F7 Camera Development Kit order code

Part Number	Description	Includes	Resale
EV-STM32F7CAM-DVK	STM32F7 Camera Development Kit	STM32F746 Discovery kit TD7740 adapter board TD7740-FBAC camera module USB mini cable Flexible flat cable Quick Reference Card Quick Start Guide, software and application to download	€ 89.-

### KEY FEATURES

- Flexible and low-cost video solution for video applications
- Video capturing and streaming with VGA quality (640 x 480) or lower
- 4.3-inch colour LCD-TFT with capacitive touch screen
- Low current consumption
- Mbed-enabled (mbed.org)

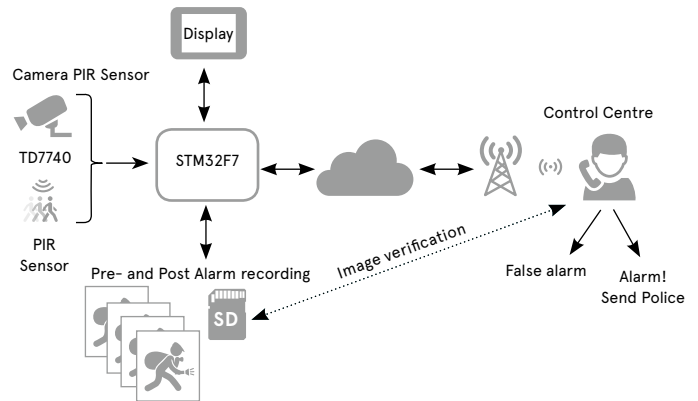
### TARGET APPLICATIONS

- Door phone and home automation
- Security and video surveillance
- Industrial monitoring system
- Automated inspection
- HVAC system control
- Access control systems

## APPLICATION EXAMPLE

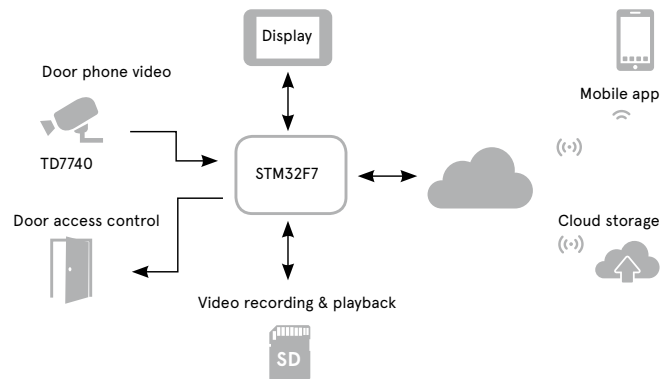
### Example 1 – PIR with visual verification for security & surveillance

A camera PIR sensor will detect indoor or outdoor presence and the system will start capturing images. These images are stored onto the SD card at a predefined timing and quality. An alarm will be sent to a control centre where an operator can analyse the images in real-time. In a suspicious situation, the operator can request pre-recorded images and decide to send the police to the respective building. Visual verification improves intrusion detection and helps to discriminate between real and false alarms.



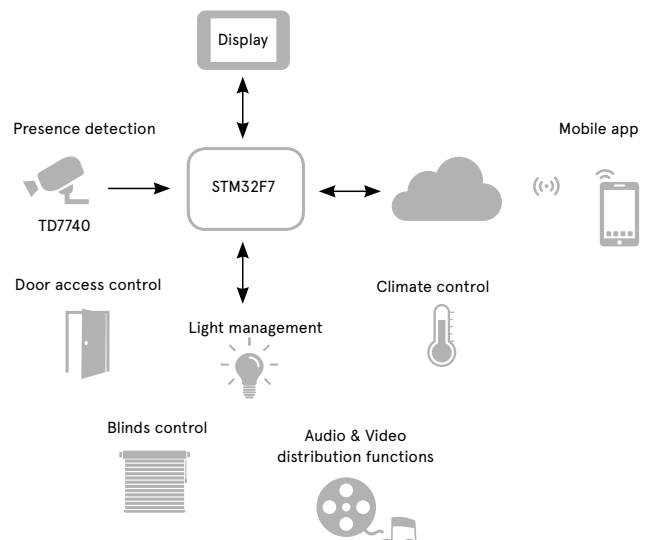
### Example 2 – Video door phone

Video and audio are recorded when someone calls on the door. The door can be opened by using the touch screen display or with a mobile app. The recorded videos can be replayed on request.



### Example 3 – Presence detection for home automation

Presence in a room will be detected when someone enters the room. Climate, light and other functions can be controlled automatically based on user-predefined settings. Alternatively, you can control home automation functions or turn on/off the camera by using a mobile app.



## STM32F7 DISCOVERY KIT



The STM32F7 development board enables a wide diversity of applications benefiting from video, audio, multi-sensor support, graphics, security and high-speed connectivity features.

### Main Features

- STM32F746NGH6 microcontroller featuring 1 Mbytes of Flash memory and 340 Kbytes of RAM, in BGA216 package
- On-board ST-LINK/V2-1 supporting USB re-enumeration capability
- Mbed-enabled (mbed.org)
- USB functions: virtual COM port, mass storage, debug port
- 4.3-inch 480x272 color LCD-TFT with capacitive touch screen
- Camera connector
- SAI audio codec
- Stereo speaker outputs
- Two ST MEMS microphones
- 128-Mbit Quad-SPI Flash memory
- 128-Mbit SDRAM (64 Mbits accessible)
- Connector for microSD card
- USB OTG FS with Micro-AB connectors
- Ethernet connector compliant with IEEE-802.3-2002
- Five power supply options
- Power supply output for external applications: 3.3 V or 5 V
- Comprehensive free software including a variety of examples, part of STM32Cube package
- Supported by a wide choice of integrated development environments

## MICROCONTROLLER OPTIONS

<b>ARM® Cortex®-M7 – 216 MHz</b>  <b>Acceleration</b> · ART Accelerator™ · L1 cache: data and instruction cache · Chrom-ART Accelerator™ · Floating Point Unit  <b>Connectivity</b> · 2 x USB2.0 OTG FS/HS · SDIO (x2 on F76x & F779*) · USART, UART, SPI, I <sup>2</sup> C · CAN2.0 · HDMI-CEC · Ethernet IEEE 1588 · FMC · MDIO slave (on F76x and F77x) · Camera I/F · Dual mode Quad-SPI  <b>Audio</b> · I <sup>2</sup> S + audio PLL · 2 x SAI · 2 x 12-bit DAC · SPDIF-RX  <b>Others</b> · 16 and 32-bit timers · 3 x 12-bit ADC (2.4MSPS) · Low voltage 1.7 to 3.6V · 85 °C and 105 °C range	 <b>Product</b>	<b>F<sub>CPU</sub> (MHz)</b>	<b>L1 cache (I/D)</b>	<b>FPU</b>	<b>Flash (bytes)</b>	<b>RAM (KB)</b>	<b>JPEG codec</b>	<b>CAN</b>	<b>DF SDM</b>	<b>TFT LCD controller</b>	<b>MIPI®-DSI</b>
	STM32F7x9*	216	16K+16K	Double Precision	1M to 2M (RWW)	512K (incl. 64K DTCM) + 16K ITCM + 4K backup	·	3	·	·	·
	STM32F7x7*	216	16K+16K	Double Precision	1M to 2M (RWW)	512K (incl. 64K DTCM) + 16K ITCM + 4K backup	·	3	·	·	·
	STM32F7x6*	216	4K+4K	Single Precision	512K to 1M	320K (incl. 64K DTCM) + 16K ITCM + 4K backup	·	2	·	·	·
	STM32F7x5	765	16K+16K	Double Precision	1M to 2M (RWW)	512K (incl. 64K DTCM) + 16K ITCM + 4K backup	·	3	·	·	·
745		4K+4K	Single Precision	512K to 1M	320K (incl. 64K DTCM) + 16K ITCM + 4K backup	·	2	·	·	·	

\* Only STM32F756, STM32F777 and STM32F779 are the Hardware Crypto / hash devices

## TD NEXT MINIATURE CAMERA MODULES

TD next provides a wide range of high quality and cost-effective miniature camera modules for VGA, 720p and 5Mp resolution. The TD7740 modules include a VGA image sensor, an optimized lens and a robust connector. Customized modules can be developed depending on requirements and volume. Avnet Silica and TD next provide in-depth design support and full customer service.



The STM32F7 Camera Development Kit includes a TD7740-FBAC VGA module with flex connector, 90° HFOV (horizontal Field of View) lens and IR filter on top of the lens.



### Camera module options



#### TD' 7740 SB BB

VGA  
Dual filter  
SMK socket 8 mm x 8 mm  
Color bayer  
Lens 100°



#### TD' 7740 SB AB

VGA  
Dual filter  
SMK socket 8 mm x 8 mm  
Color bayer  
Lens 90°



#### TD' 7740 SB AC

VGA  
IR filter  
SMK socket 8 mm x 8 mm  
Color bayer  
Lens 90°



#### TD' 7740 FB AC

VGA  
IR filter  
Flex 25 mm  
Color bayer  
Lens 90°



#### TD' 7740 SB AA

VGA  
No filter  
SMK socket 8 mm x 8 mm  
Color bayer  
Lens 90°



#### TD' 7740 SB DC

VGA  
IR filter  
SMK socket 8 mm x 8 mm  
Color bayer  
Lens 128°



#### TD' 7740 SB EC

VGA  
IR filter  
SMK socket 8 mm x 8 mm  
Color bayer  
Lens 66°



#### TD' 7740 GB AC

VGA  
IR filter  
Flex 38 mm  
Color bayer  
Lens 90°

Visit our Avnet Silica "Embedded Vision" dedicated website [avnet-silica.com/embedded-vision](http://avnet-silica.com/embedded-vision) to find out more about other Embedded Vision solutions.



All trademarks and logos are the property of their respective owners. This document provides a brief overview only, no binding offers are intended. No guarantee as to the accuracy or completeness of any information. All information is subject to change, modifications and amendments without notice.