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®-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.

Key Features
- Flexible and low-cost video solution for video applications
- Video capturing and streaming with VGA quality (640x480) or lower
- 4.3-inch colour LCD-TFT with capacitive touch screen
- Video USB interfacing
- 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

ST STM32F7 Camera Development Kit order code

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Includes</th>
<th>Resale</th>
</tr>
</thead>
<tbody>
<tr>
<td>EV-STM32F7CAM-DVK</td>
<td>STM32F7 Camera Development Kit</td>
<td>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</td>
<td>€ 89.00</td>
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</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Product</th>
<th>FCPU (MHz)</th>
<th>L1 cache (I/D)</th>
<th>FPU</th>
<th>Flash (bytes)</th>
<th>RAM (KB)</th>
<th>JPEG codec</th>
<th>CAN</th>
<th>DF</th>
<th>SDM</th>
<th>TFT LCD controller</th>
<th>MIPI®-DSI</th>
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<tbody>
<tr>
<td>STM32F7x9*</td>
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<td>16K+16K</td>
<td>Double Precision</td>
<td>1M to 2M (RWW)</td>
<td>512K (incl.64K DTCM) + 16K ITCM + 4K backup</td>
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<td></td>
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</table>

* 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.

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**Camera module options**

<table>
<thead>
<tr>
<th>TD' 7740 SBBB</th>
<th>TD' 7740 SBAB</th>
<th>TD' 7740 SBAC</th>
<th>TD' 7740 FBAC</th>
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<tbody>
<tr>
<td>Dual filter</td>
<td>Dual filter</td>
<td>IR filter</td>
<td>IR filter</td>
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<td>SMK socket 8 mm x 8 mm</td>
<td>SMK socket 8 mm x 8 mm</td>
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<tr>
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<td>Color bayer</td>
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<tr>
<td>Lens 100°</td>
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<table>
<thead>
<tr>
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<th>TD' 7740 SBEC</th>
<th>TD' 7740 GBAC</th>
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<td>SMK socket 8 mm x 8 mm</td>
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<tr>
<td>Lens 90°</td>
<td>Lens 128°</td>
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<td>Lens 90°</td>
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