

STR750F MCU family

32-bit ARM-based Flash microcontrollers



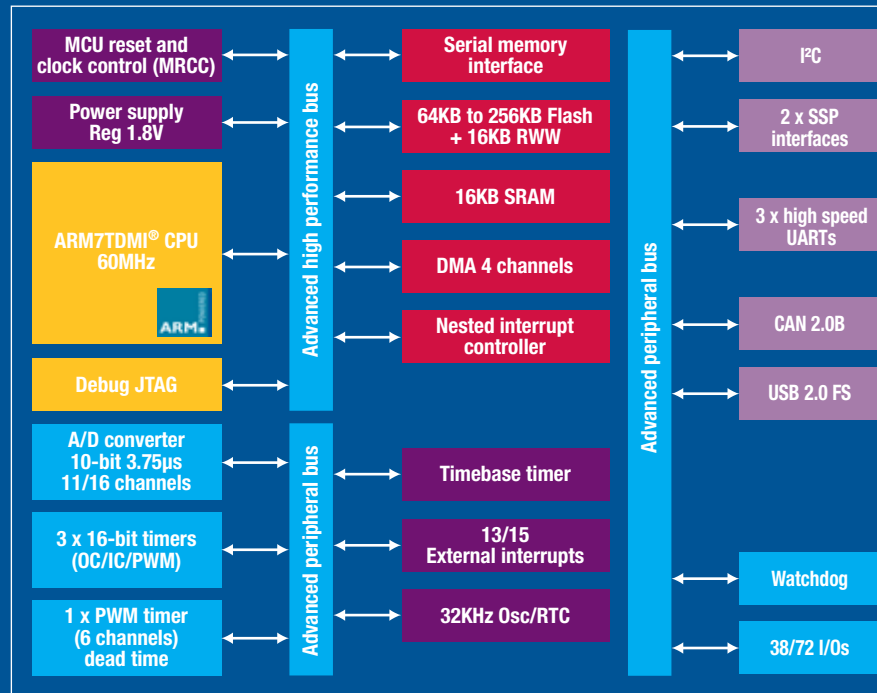
September 2006

The STR750F is a new series of super-integrated, single-chip 32-bit ARM7-based MCUs from **STMicroelectronics**. Delivering performance without compromise, the STR750F series combines into a single device, high performance and low power consumption with ample memory and a full peripheral set. With a wide range of available configurations, the STR750F series is ideal for virtually any application. Packed with peripherals, the STR750F series offers a host of innovative features for advanced control, security and communication.

Based on an ARM7TDMI core, the STR750F series offers high performance with 54MIPS at 60MHz and low power consumption down to 10µA in standby mode. To increase versatility, the STR750F can be used with either a 3.3V or a 5V power supply.

Applications

- Industrial
 - PLC
 - Inverters
 - Printers, scanners
 - Boiler control
 - Industrial networking
- Building and security
 - Alarm systems
 - Video intercom
 - HVAC
- POS
 - Vending machines
 - ATM machines
- Appliances
 - Motor drive
 - Application control
- Data loggers, medical monitors, PC peripherals



DMA: Direct memory access RTC: Real-time clock RWW: Read-while-write SSP: Synchronous serial peripheral

Innovative features

Many innovative features are inside the STR750F series such as:

- A backup clock in case the main quartz oscillator fails
- Fast startup capability from reset or low power modes (as low as 55µs to execute first instruction)
- In low power modes, the automatic wake-up (AWU) feature will enable the micro to wake-up without any external signal nor need for a quartz
- Flexible and powerful 16-bit timers and PWM timer with fast clock and synchronization capability
- 3 x UARTs provide hardware support for LIN protocol (master mode)
- The serial memory interface (SMI) enables easy connection to external SPI Flash for data storage

Wide choices

The STR750F series is available with up to 256KB of Flash (retention guaranteed up to 20 years @ 85°C) plus an additional 16K bank of read-while-write Flash for EEPROM emulation. It is ready for optimum connectivity and control with up to eight communication peripherals including USB and CAN, powerful 16-bit timers, a fast 10-bit ADC. This list is completed by a 4-channel DMA to offload the CPU and a serial memory interface. With its rich set of peripherals, the STR750F family will help customers reduce system cost while addressing all their needs.

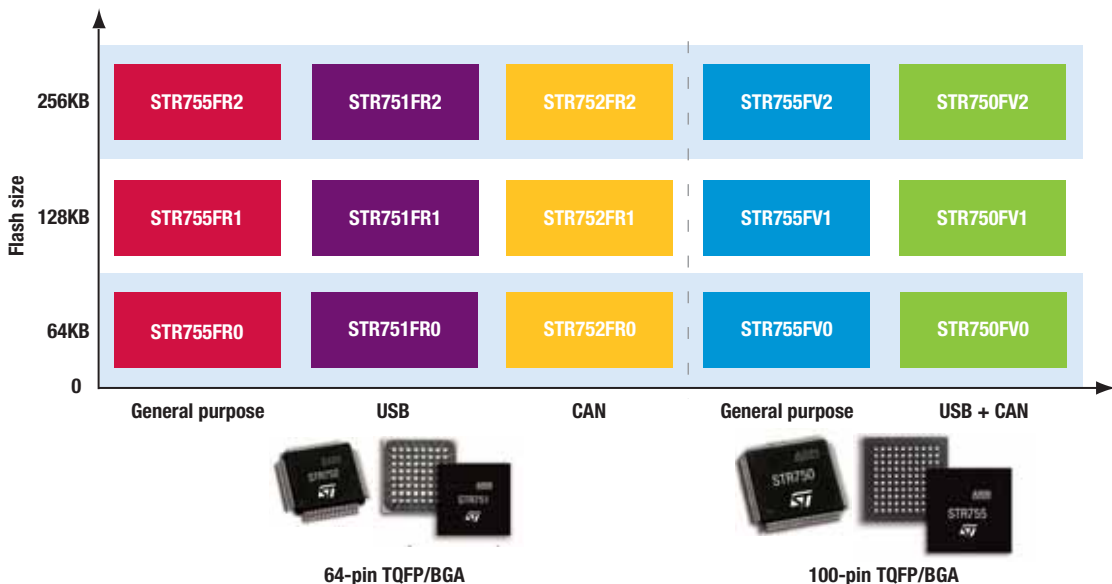
Motor control

The STR750F embeds timers and ADC features that are perfectly suited to tri-phase motor control: PWM timer offers six outputs, dead time generation, edge aligned and center aligned waveforms, emergency stop, synchro capability with ADC, synchro capability with other timers, programmable smoke inhibit feature to protect registers against unwanted writing and a 16-bit timer for encoder interfacing.

STR750F MCU family

Features and benefits

Features	Benefits
Industry standard ARM7TDMI core running up to 60MHz	Well known core with enough processing power (54MIPS) to tackle most applications
Excellent low power performance through flexible clock management and multiple low power modes with consumption down to 10µA in standby mode	Easy adjustment of performance/power consumption ratio. Suitable for battery operated applications
Innovative features: backup clock, fast startup, auto wake-up, serial memory interface (SMI) and LIN support	Additional security and performances for the application
Single 3.3 and 5V supplies	Additional flexibility for customers. No need for external regulator. Real 5V drive on the I/O when 5V is used
Rich peripheral set: USB, CAN, 2 x SSP, I ² C, 3 x UART, 5 x timers, 10-bit ADC and up to 72 GPIO	Meets all application needs, reduces system cost
Powerful timers and ADC	Perfect fit for triphase motor control applications
Extensive firmware support and tools. The STR750F library is freely distributed from ST, and STR7 devices are supported by third-party tool and RTOS vendors	Dramatically reduces development time and increases ease of use



Device summary

Part number	Program memory type	Prog. (bytes)	RAM (bytes)	A/D inputs	Timer functions		Serial interface	I/Os (high current)	Package	Supply voltage	Special features
	Flash				12 or 16-bit (C/OC/PWM)	Others					
STR750FV0	•	64K	16K	16x10-bit	5x16-bit (6/6/12)	WDG, RTC	2xSSP/I ² C/3xHS-UART/CAN/USB	72(9)	TQFP100/ BGA100	3.0 to 3.6V or 4.5 to 5.5V (without USB)	4xDMA, AWU, SMI, on-chip RC oscillator, motor control oriented PWM, -40 to 105°C (optional)
STR755FV0	•	64K	16K	16x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART	72(9)			
STR750FV1	•	128K	16K	16x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART/CAN/USB	72(9)			
STR755FV1	•	128K	16K	16x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART	72(9)			
STR750FV2	•	256K	16K	16x10-bit	5x16-bit (5/5/11)	WDG, RTC	2xSSP/I ² C/3xHS-UART/CAN/USB	72(9)	TQFP64/ BGA64	3.0 to 3.6V or 4.5 to 5.5V	
STR755FV2	•	256K	16K	16x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART	72(9)			
STR751FR0	•	64K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART/USB	38(7)			
STR752FR0	•	64K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART/CAN	38(7)			
STR755FR0	•	64K	16K	11x10-bit	5x16-bit (6/6/12)	WDG, RTC	2xSSP/I ² C/3xHS-UART	38(7)	TQFP64/ BGA64	3.0 to 3.6V or 4.5 to 5.5V	
STR751FR1	•	128K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART/USB	38(7)			
STR752FR1	•	128K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART/CAN	38(7)			
STR755FR1	•	128K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/3xHS-UART	38(7)			
STR751FR2	•	256K	16K	11x10-bit	5x16-bit (6/6/12)	WDG, RTC	2xSSP/I ² C/2xHS-UART/USB	38(7)	TQFP64/ BGA64	3.0 to 3.6V or 4.5 to 5.5V	
STR752FR2	•	256K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/2xHS-UART/CAN	38(7)			
STR755FR2	•	256K	16K	11x10-bit		WDG, RTC	2xSSP/I ² C/2xHS-UART	38(7)			

Development tools

STMicroelectronics' 32-bit, ARM core-based microcontrollers are supported by a complete range of high-end and low cost development tools. This extensive line of hardware/software tools includes easy-to-use starter kits, complete development tool solutions, programming tools and embedded operating systems, all tailored for ST's ARM core-based microcontrollers. Tools listed in this document are distributed by STMicroelectronics.

Third-parties

Aiji System: (아이지시스템) www.aijssystem.com
Anby: (안비) www.anby.cn
ARM: www.arm.com
Ashling: www.ashling.com
BP Microsystems: www.bpmicro.com
CMX Systems: www.cmx.com
Data I/O: www.data-io.com
Dataman: www.dataman.com
eCosCentric: www.ecoscentric.com
ElneC: www.elnec.sk

Embest: (英務特) www.embedinfo.com
Greenchips: (그린칩스) www.greenchips.co.kr
Green Hills Software: www.ghs.com
Hitex: www.hitex.com
IAR: www.iar.com
iSYSTEM: www.isystem.com
Keil: www.keil.com
Lauterbach: www.lauterbach.com
Manley: www.manley.com.cn
Micrium: www.micrium.com

NexGen Software: www.nexgen-software.com
Nohau: www.nohau.com
PLS: www.pls-mc.com
Propox: www.propox.com
Raisonance: www.raisonance.com
Rowley: www.rowley.co.uk
Segger: www.segger.com
Signum: www.signum.com
System General: www.sg.com.tw
Xeltec: www.xeltec.com

Evaluation board

Complete hardware evaluation platform with STR750FV2, implementing the full range of device peripherals and features.

Starter kits

Complete (evaluation board, emulator, software toolset), low cost, out-of-the-box solutions from Hitex, IAR, Keil and Raisonance for evaluating and starting development on ST's ARM core-based MCUs.

Development environments

Choose from the range of development solutions from third-party vendors or one of the three development environments distributed by ST: ARM RealView Developer Kit for ST, Embedded Workbench for ARM (EWARM) from IAR, or RIDE from Raisonance.

Part number	Description
Starter kits	
STR750-SK/HIT	ARM Starter Kit from Hitex, includes HITOP5 (16K code-size limited version) with GNU C/C++ compiler, debugger, Tantino (USB/JTAG) in-circuit emulator, evaluation board for STR750F
STR750-SK/IAR	KickStart Kit from IAR, includes IAR Embedded Workbench for ARM (EWARM – 32K code-size limited version), J-Link (USB/JTAG) in-circuit emulator, evaluation board for STR750F
STR750-SK/KEIL	ARM Starter Kit from Keil, includes RealView Microcontroller Development Kit for ARM (16K code-size limited version) with ARM C/C++ compiler, ULINK (USB/JTAG) in-circuit emulator and evaluation board for STR750F
STR750-SK/RAIS	REva Starter Kit from Raisonance, includes RIDE (16K code-size limited version) with GNU C/C++ compiler, debugger, RLink (USB/JTAG) in-circuit emulator, demonstration motherboard and daughter board for STR750F
Evaluation board	
STR750-EVAL	STR750FV2 microcontroller, motor control connector and evaluation features including ADC, USB and CAN
Development environments¹	
STR79-RVDK	ARM RealView Developer Kit for ST (no code-size limit), with ARM C compiler (C++ extension is available) and RealView ICE Micro Edition (USB/JTAG) hardware
STR-EW/IAR	IAR's Embedded Workbench for ARM (EWARM – no code-size limit) with IAR C/C++ compiler and one year of support and upgrades
STX-PRO/RAIS	Raisonance's RIDE (no code-size limit) with GNU C/C++ compiler, and RLink (USB/JTAG) in-circuit emulator

For additional part numbers for limited versions and other options, refer to the STR7 and STR9 Development Tools guide or the online product selector at www.st.com/mcu



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Full product information at www.st.com

Order code: BRSTR750F0906

