

STM32 Value line



STMicroelectronics

32-bit microcontrollers extending your choice for
cost-sensitive applications

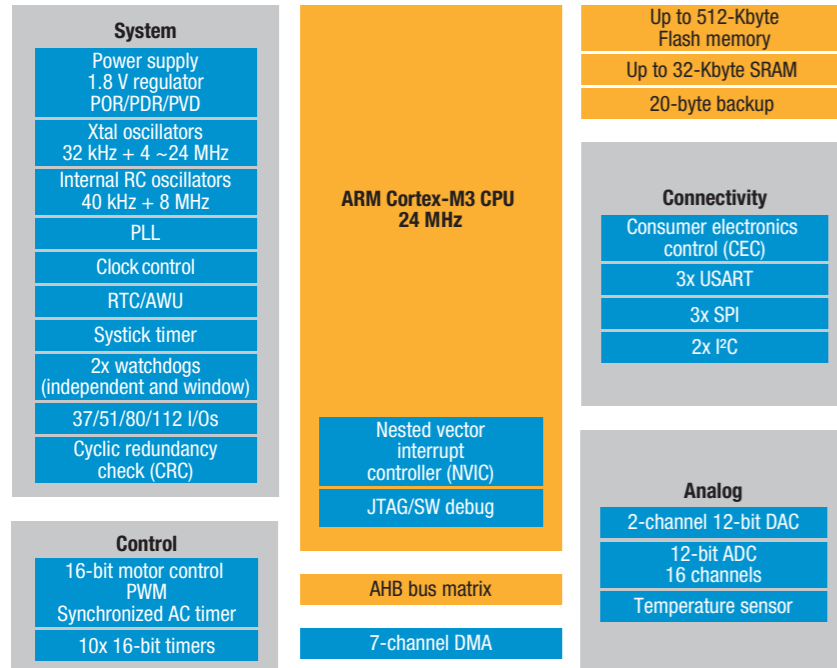
STM32 Value line

The STM32 Value line complements our STM32 Cortex™-M microcontroller product portfolio by offering a low-cost product line that is pin-to-pin compatible with the STM32 portfolio. It brings new features such as new 16-bit timers and CEC function to expand the range of applications addressed in consumer, appliance and industrial segments.

Based on the ARM Cortex-M3 core running at up to 24 MHz, the STM32 Value line offers excellent cost-performance-peripherals trade-off.

It provides all the essential features to make it the perfect choice to develop cost-effective applications traditionally addressed by 16-bit microcontrollers.

STM32 Value line block diagram



Abbreviations:
 AWU: Auto wake up from halt
 BOR: Brown-out reset
 PC: Inter integrated circuit
 PDR: Power-down reset
 POR: Power-on reset
 PVD: Programmable voltage detector
 RTC: Real-time clock
 SPI: Serial peripheral interface
 USART: Universal sync/async receiver transmitter

Features and benefits

Features	Benefits
Up to eleven PWM 16-bit timers including advanced control timer for a total of 26 channels	Perfect fit for control applications
Three independent PWM 16-bit timers with complementary output and deadtime generation	Ideal for appliance control applications including induction cooking
On-chip 12-bit dual-channel DAC with DMA support and output buffers	Decreased total system cost
Consumer electronics control (CEC) peripheral	Reduced design complexity and minimized CPU, peripheral and memory use
CEC, 400 kHz I ² C, up to 12 Mbit/s master and slave SPI, up to 3 Mbit/s USART	Extensive connectivity capability
ARM Cortex-M3 Thumb-2 32-bit instruction set and 7-channel DMA	Achieves superior performance with 16-bit code density
CRC (cyclic redundancy check) with DMA support	Eases Flash memory integrity check
Built-in POR, PDR, LVD, watchdog timer, factory trimmed 8 MHz RC oscillator and 40 kHz for RTC and watchdog	System cost reduction

Applications

- Consumer
 - A/V receivers, TVs, Blu-ray disc players
 - Printers
 - Remote controls
 - Toys
- Industrial
 - Electricity meters
 - Low-end UPS
- Appliances
 - Home appliances
 - Motor control
 - Power tools

STM32 Value line highlights

Well adjusted features for appliance, consumer and industrial applications

The STM32 Value line delivers high processing performance capability coupled with up to eleven 16-bit timers, including a motor control timer and a fast 1.2 μs conversion time 12-bit ADC for efficient appliance and industrial-control applications.

The 12-bit dual-channel DAC can be used in many audio applications such as security alarms, toys, answering machines, human-machine interfacing and in many other control-engineering, home automation and audio applications.

The built-in HW CEC (consumer electronic control) interface enables connectivity for controlling HDMI-enabled home entertainment systems, so releasing processor resources.

Fully pin-to-pin and software compatible with the STM32 family

The STM32 Value line, with added functionalities and fully compatible with all the STM32 product lines, expands uses for the STM32.

STM32 Value line: development tools

A complete set of hardware and software is available to help designers evaluate the STM32 Value line features and to allow fast application development.

STM32 Value line Discovery

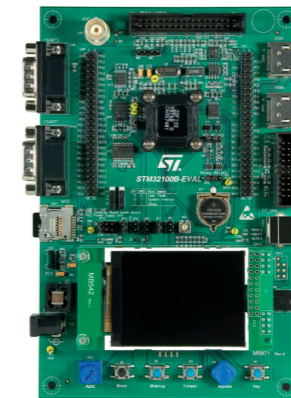
The cheapest and quickest way to discover the STM32 Value line family. Embedded ST-LINK or ST-LINK/V2 included to debug applications.



Order code: STM32VLDISCOVERY

STM32 Value line evaluation boards

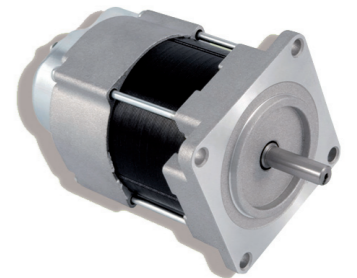
Complete hardware evaluation platforms implementing the full range of device peripherals and features.



Order codes: STM32100B-EVAL with STM32F100VBT6B 128-Kbyte MCU and STM32100E-EVAL with STM32F100ZET6B 512-Kbyte MCU

STM32 Value line motor control kit

ST motor control starter kit with complete sensor and sensorless libraries, evaluation hardware platform for vector drive of 3-phase brushless magnet synchronous motors, plus Segger J-Link for host PC interface.



Order code: STM32100B-MCKIT with STM32F100VBT6B

Operating systems, solution stacks and more

Choose from a full range of development solutions from lead suppliers that deliver start-to-finish control of application development from a single integrated development environment. Access a variety of royalty-free, small-footprint operating systems and a wealth of off-the-shelf stacks from numerous third-party suppliers.

STM32 embedded firmware

STM32 firmware library: complete packages consisting of device drivers for all the standard device peripherals. Each device driver includes a set of functions covering full peripheral functionality.

STM32 Class B norm certification self-test routines: a full set of ready to-use self-test routines for home-appliance certification under EN/IEC 60335-1 Class B norm (functional safety).

STM32 motor control software: complete 3-phase motor control library supporting PMSM motors in sensor and sensorless mode and AC induction motors in sensor mode, and a patented single-shunt algorithm.

STM32 CEC software: this complete software supported by the STM32100B-EVAL and STM32100E-EVAL evaluation boards provide an implementation of CEC high-level protocol and full demonstration software.

Device summary

Part number	Package	Flash size (Kbytes)	Internal RAM size (Kbytes)	Timer functions		ADC	DAC	I/Os	Serial interface	Supply voltage (V)
				16-bit	Others					
STM32F100 Value line - 24 MHz CPU										
STM32F100C4	LQFP48 (7x7)	16	4	6x16-bit	2xWDG, RTC, 24-bit down counter, 2x16-bit basic timers	10x12-bit	2x12-bit	37	1xSPI, 1xI ² C, CEC, 2xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100C6	LQFP48 (7x7)	32	4	6x16-bit		10x12-bit	2x12-bit	37	1xSPI, 1xI ² C, CEC, 2xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100C8	LQFP48 (7x7)	64	8	7x16-bit		10x12-bit	2x12-bit	37	2xSPI, 2xI ² C, CEC, 3xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100CB	LQFP48 (7x7)	128	8	7x16-bit		10x12-bit	2x12-bit	37	2xSPI, 2xI ² C, CEC, 3xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100R4	LQFP64 (10x10), TFBGA6 (5x5)	16	4	6x16-bit		16x12-bit	2x12-bit	51	1xSPI, 1xI ² C, CEC, 2xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100R6	LQFP64 (10x10), TFBGA64 (5x5), Unsaan wafer V.l. 100%	32	4	6x16-bit		16x12-bit	2x12-bit	51	1xSPI, 1xI ² C, CEC, 2xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100R8	LQFP64 (10x10), TFBGA64 (5x5)	64	8	7x16-bit		16x12-bit	2x12-bit	51	2xSPI, 2xI ² C, CEC, 3xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100RB	LQFP64 (10x10), TFBGA64 (5x5)	128	8	7x16-bit		16x12-bit	2x12-bit	51	2xSPI, 2xI ² C, CEC, 3xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100RC	LQFP64 (10x10)	256	24	11x16-bit		16x12-bit	2x12-bit	51	3xSPI, 2xI ² C, CEC, 5xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100RD	LQFP64 (10x10)	384	32	11x16-bit		16x12-bit	2x12-bit	51	3xSPI, 2xI ² C, CEC, 5xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100RE	LQFP64 (10x10)	512	32	11x16-bit		16x12-bit	2x12-bit	51	3xSPI, 2xI ² C, CEC, 5xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100V8	LQFP100 (14x14)	64	8	7x16-bit		16x12-bit	2x12-bit	80	2xSPI, 2xI ² C, CEC, 3xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100VB	LQFP100 (14x14)	128	8	7x16-bit		16x12-bit	2x12-bit	80	2xSPI, 2xI ² C, CEC, 3xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100VC	LQFP100 (14x14)	256	24	11x16-bit		16x12-bit	2x12-bit	80	3xSPI, 2xI ² C, CEC, 5xUSART (IrDa, ISO 7816)	2 to 3.6
STM32F100VD	LQFP100 (14x14)	384	32	11x16-bit		16x12-bit	2x12-bit	80		2 to 3.6
STM32F100VE	LQFP100 (14x14)	512	32	11x16-bit		16x12-bit	2x12-bit	80		2 to 3.6
STM32F100ZC	LQFP144 (20x20)	256	24	11x16-bit		16x12-bit	2x12-bit	112		2 to 3.6
STM32F100ZD	LQFP144 (20x20)	384	32	11x16-bit	16x12-bit	2x12-bit	112	2 to 3.6		
STM32F100ZE	LQFP144 (20x20)	512	32	11x16-bit	16x12-bit	2x12-bit	112	2 to 3.6		

