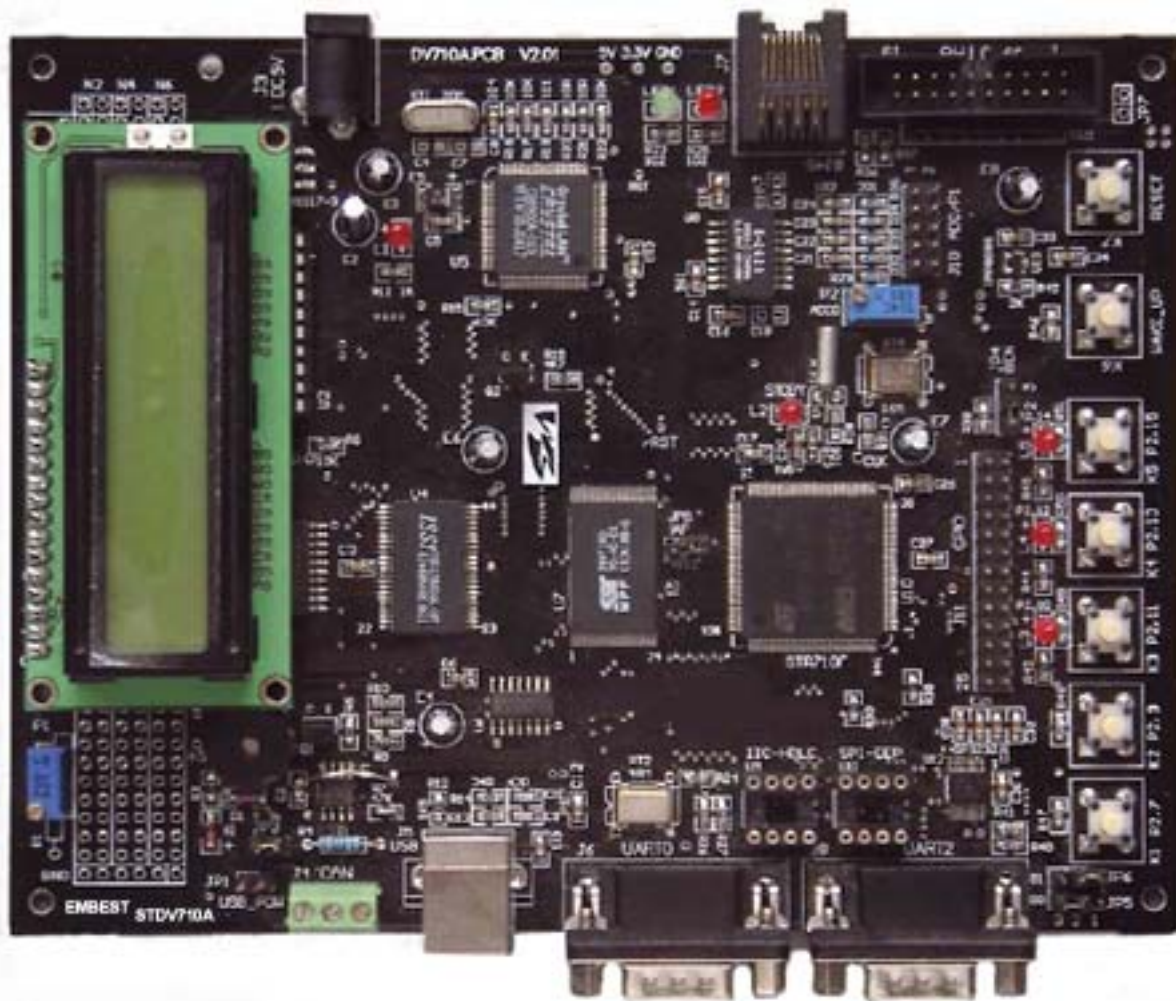


Embest STDV710A Evaluation Board

- A Super-integrated Evaluation board for ST Microelectronic STR710FZ2T6 Microcontroller (STR710 series)
- RS232, USB device, Ethernet, CAN, LCD, SPI, I2C, uCos, ...
- Plenty of software examples, all in source code



Embest STDV710A Evaluation Board

Description

The STR710F-Z2T6 is an ARM-powered microcontroller with embedded Flash and RAM. It is based on the ARM7TDMI core with low pin-count packages to aim at customers who want the power and flexibility of a 32-bit microcontroller plus an extensive range of peripheral functions and enhanced I/O capabilities. The STR710F-Z2T6 with high connectivity is using various interfaces including CAN, USB, SPI, I2C, UART, EMI (External Memory Interface) and etc. The controller is designed to target industrial control applications such as factory automation, point-of-sale and vending machines, and testing equipment, as well as mass-market telecom applications such as bridges and protocol translators.

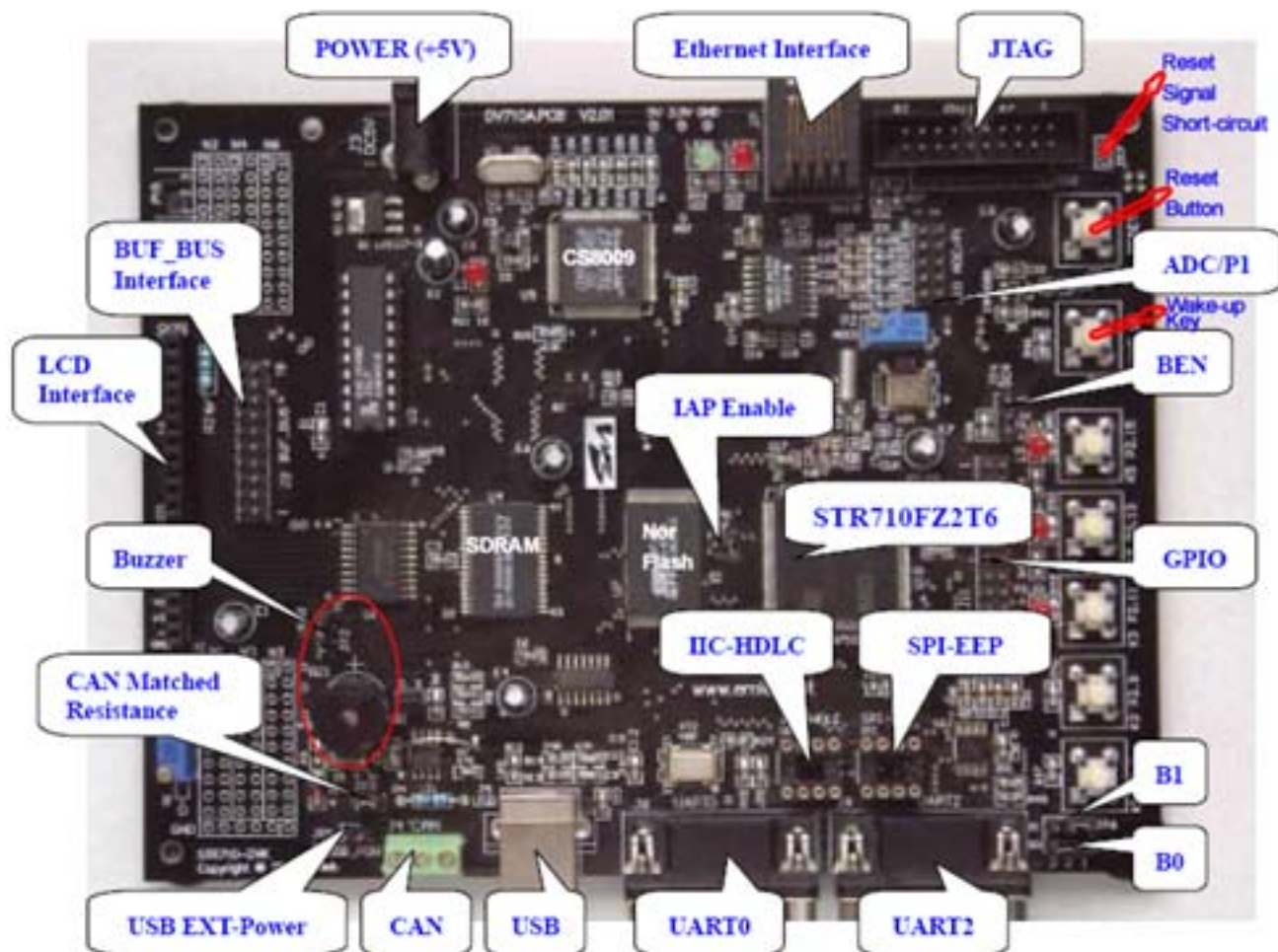
Embest STDV710A™ Evaluation Board is intended as a low cost evaluation platform for STR710F-Z2T6

devices. The board expands all features of STR710F-Z2T6 microcontroller and support various additional peripherals including 512k Bytes SRAM and 2M bytes flash on EMI. It integrates LEDs, buzzer, test buttons, LCD, Ethernet, CAN, SPI, I²C, USB interfaces to create a versatile stand-alone test platform. Users can fully take use of the board to meet your development requirements and applications. The Embest STDV710A Evaluation Board Kit is a complete development environment contains an evaluation board, a JTAG debugger interface and a plenty of sample programs for embedded development.

Hardware Specification

- Dimensions: 163x124mm
- Working temperature: -40~+85 Celsius
- Processor: STR710F-Z2T6 with embedded 272kByte (256k+16k) FLASH memory and 64kByte SRAM memory
- Power input: +5.0V/1A
- 16-bit EMI SRAM: 256k 16-bit EMI Nor Flash: 1M
- 10M Ethernet interface (CS8900)
- USB2.0 full speed (12Mbs) interface
- CAN2.0 communication interface with CAN driver-chip
- UART0 and UART2 with 2 RS232 ports (can interconnect to each other for RS232 communication experiment)
- Serial Peripheral Interface- SPI (flash chip is able to plug in and out for replacement)
- II-C interface (EEPROM chip is able to plug in and out for replacement) and HDLC interface reuse
- 16x2 Character LCD or 128x64 Dot-matrix LCD
- 5 LED indicator light: one for power, one for standby, three others are general used
- 4 channel ADC and 1 on-board regulator (ADC experiment)
- 1 buzzer (PWM experiment)
- 1 Reset button
- 1 WAKE-UP button
- 5 general used keys
- 32 CPU multi-functional reused I/O expansion (HDLC, Smart Card, etc.)
- IAP (In Application Programming) function
- A standard 20-pin Debug-JTAG connector

Interfaces and Jumpers Introduction



Interfaces: List below the introduction of the main interfaces

| Interface | Name | Description |
|-----------|---------|--------------------------------------|
| J1 | LCD | LCD interface |
| J2 | BUF_BUS | 8-bit data bus interface with buffer |
| J3 | DC5V | Power DC5V |
| J4 | CAN | CAN communication interface |
| J5 | USB | USB (Device) interface |
| J6 | UART0 | Serial port 0 |
| J7 | RJ45 | 10M Ethernet interface |
| J8 | UART2 | Serial port 2 |
| J9 | JTAG | JTAG interface |
| J10 | ADC/P1 | ADC interface |
| J11 | GPIO | General I/O ports |

Jumpers: List below the functions and settings of the main interfaces

| Jumper | Description | Setting | Setting explanation |
|--------|-------------|---------|---------------------|
|--------|-------------|---------|---------------------|

| | | | |
|-----|-------------------------------|--|---|
| JP1 | USB EXT-Power | Short-circuit | Power supplied by USB interface without external power supply |
| | | Disconnection | Power supplied by external power connection |
| JP2 | Buzzer Enable | Short-circuit | Connected to enable buzzer to work |
| | | Disconnection | Disable buzzer |
| JP3 | CAN MATCHED RESISTANCE | Short-circuit | Enable 120ΩCAN matched resistance |
| | | Disconnection | Disable CAN matched resistance |
| JP4 | BOOT EN | Reference to BOOT MODE SETTING | |
| JP5 | BOOT0 | | |
| JP6 | BOOT1 | | |
| JP7 | Reset Signal to Short-circuit | Reference to /TRST and /RESET | |
| JP8 | IAP Enable | Reference to IAP Enable | |

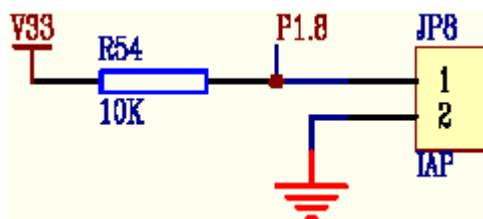
[BOOT MODE SETTING](#)

| BOOT EN | BOOT1 (B1) | BOOT0 (B0) | Mode | Boot memory mapping | Explanation |
|---------|------------|------------|-----------------|---------------------------------|---|
| 0 | any | any | user | On-chip Flash mapping to add0 | System boot from on-chip flash |
| 1 | 0 | 0 | | | |
| 1 | 0 | 1 | System memory | System memory mapping to add0 | System boot from pre-loaded booting program; Clock being frozen |
| 1 | 1 | 0 | RAM | On-chip SRAM mapping to add0 | System boot from on-chip SRAM; Used in lab development |
| 1 | 1 | 1 | External memory | External memory mapping to add0 | System boot from external memory (viz. external Flash of the board) |

[/TRST and /RESET](#)

/TRST is the reset signal for the controller when debugging use the JTAG interface. /RESET is the reset signal for CPU peripherals including on-chip and external. JP7 on board is used for the two reset signals. Considering stability while debugging, JP7 is short-circuited on the back of the board and is of no use. If users don't want to reset peripherals, you can chop up conjunctive wire on the back of the board. But you should note that JP7 be short-circuited when running offline to assure reset controller while power-up reset.

[IAP Enable](#)

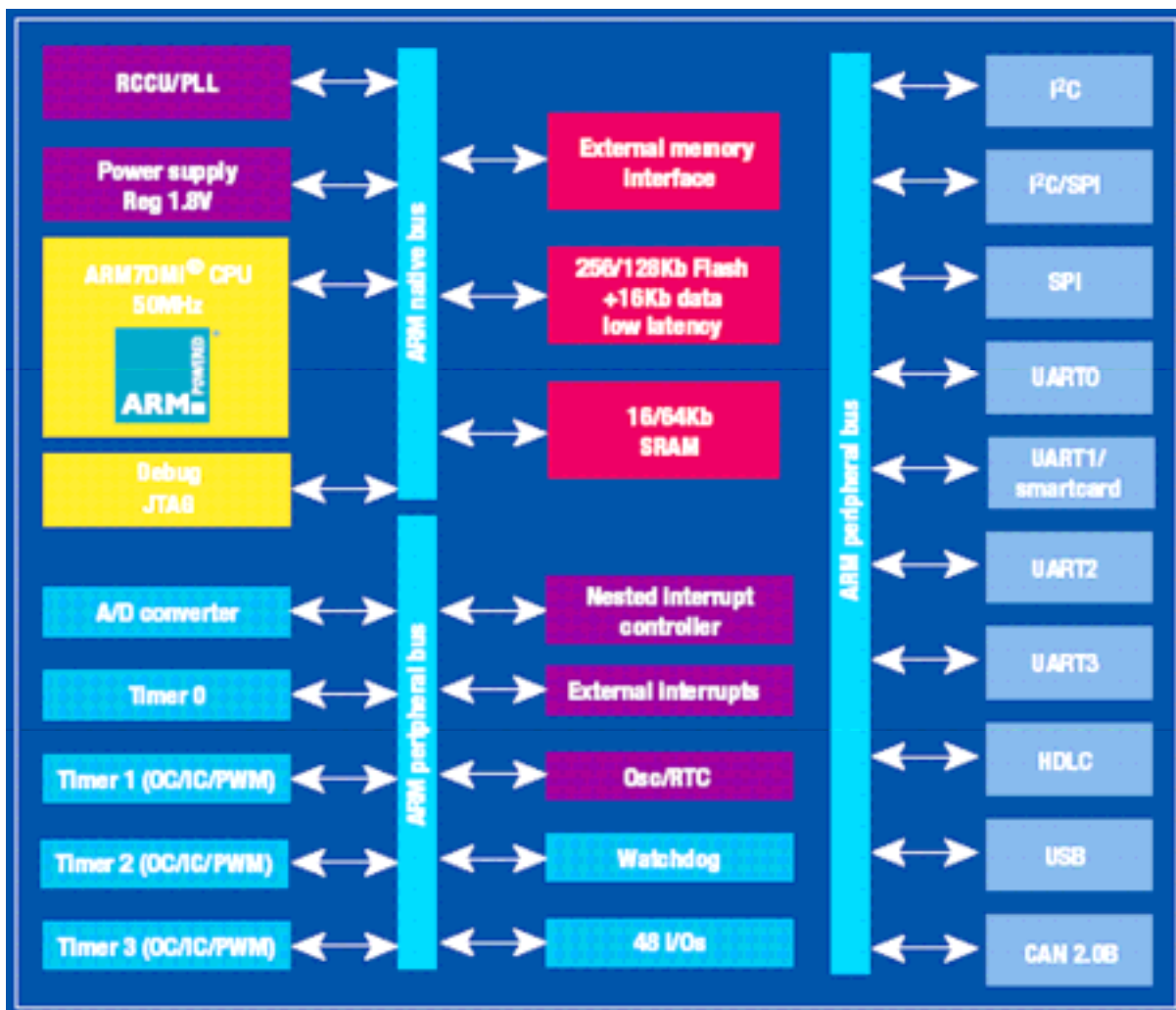


P1.8 of GPIO is used for enabling IAP program. If on-chip Flash is burned with IAP program which is provided with the board, to short-circuit JP8 to active IAP function when resetting. (Boot mode should set from on-chip

flash booting.)

Note: The definition of this jumper is only valid when running IAP program. User program can use this jumper for other purposes.

STR710F Series Microcontroller Function Block Diagram



STR710F Series Device Summary

| Features | STR710 | | STR711 | | STR712 | |
|-----------------------|-----------------------------------|-------|--------------|--------------|--------------|-------|
| | Z1T6 | Z2T6 | R1T6 | R2T6 | R1T6 | R2T6 |
| FLASH memory (bytes) | 128 K | 256 K | 128 K | 256 K | 128 K | 256 K |
| RAM (bytes) | 16 K | 64 K | 16 K | 64 K | 16 K | 64 K |
| Peripheral Functions | CAN, EMI, USB, 48 I/Os | | USB, 30 I/Os | | CAN, 32 I/Os | |
| Operating Voltage | 3.0V to 3.6V (optional 1.8V core) | | | | | |
| Operating Temperature | -40°C to +85°C | | | | | |
| Package | TQFP144 14x14 | | | TQFP64 10x10 | | |

Software Examples

Embest Provides plenty of software examples for this STDV710A evaluation board, all in source code. Each program has two versions to correspond respectively with ADS and Embest environments. Separately saved under the “ADS” and “Embest” sub-directories. The structure of the directories is as below:

| Directory | Content |
|------------|---|
| ADS | All source codes under ADS environment |
| --ADC | ADC test program |
| --CAN | CAN test program |
| --CAN_LOOP | Loop-back mode test program |
| --CAN_TX | Communicate with another device test program |
| --COMMON | Common file including driver modules of main peripheral equipments |
| --LwIP | Source code porting by LwIP from STR71x |
| --str71x | Driver modules of STR71x on-chip peripherals |
| --uCOS_II | Source code porting by μ C/OS-II from STR71x |
| --USB | STR71x USB software library including a USB mouse demonstration |
| --Ethernet | Ethernet controller test program |
| --Flash | Flash burning test program |
| --I2C | I ² C test program |
| --Key | Key test program |
| --LCD | LCD test program |
| --LED | LED test program |
| --LwIP | LwIP porting test program |
| --PRCCU | Low-power mode and wake-up test program |
| --PWM | PWM test program |
| --SPI | SPI test program |
| --TestIO | Integrated test program |
| --Timer | Timer test program |
| --UART | UART test program |
| --uCOS_II | μ C/OS-II porting test program |
| --USB | USB test program |
| --WDG | Watchdog timer test program |
| EmbestIDE | Programs source code under EmbestIDE environment (structure of sub-directories similar to that under ADS environment) |

Order Information

| | |
|-------------------|--|
| Order No. | K1 |
| Item | Embest STDV710A Evaluation Board |
| CD-ROM | <ul style="list-style-type: none"> ● software examples ● user manual ● circuit schematic drawing ● Datasheet ● STR7xx Documents for development |
| Development Tools | <ul style="list-style-type: none"> ● Embest IDE for ARM (IDE, editor, GNU ARM Compiler and Linker, debugger), unregistered evaluation version. With a Jtag cable connecting evaluation board to host PC via parallel port. |
| Others | <ul style="list-style-type: none"> ● Serial cable ● DC5V/1000mA Power Adapter ● USB cable ● Ethernet cable |
| Option Hardware | 16 x 2 Character LCD |
| Option Tools | Embest IDE for ARM Development Tools Suite I or II, III, include: <ul style="list-style-type: none"> ● IDE, editor, GNU ARM Compiler and Linker, debugger, full registered version ● Embest PowerICE or Embest Emulator, Embest UnetICE ● Embest Flash Programmer |



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