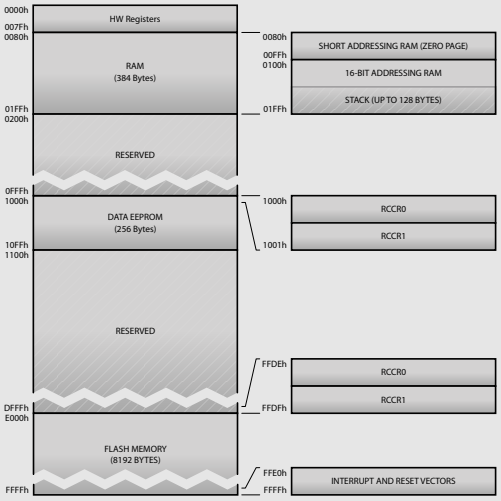
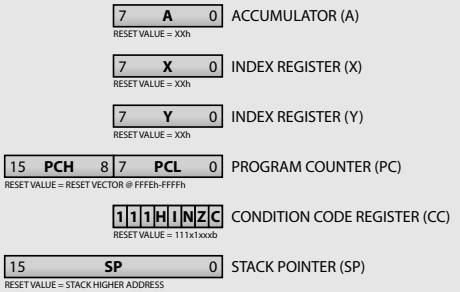
ST7FLITE2
Easy Reference

Memory Map



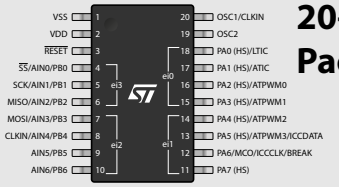
CPU Registers



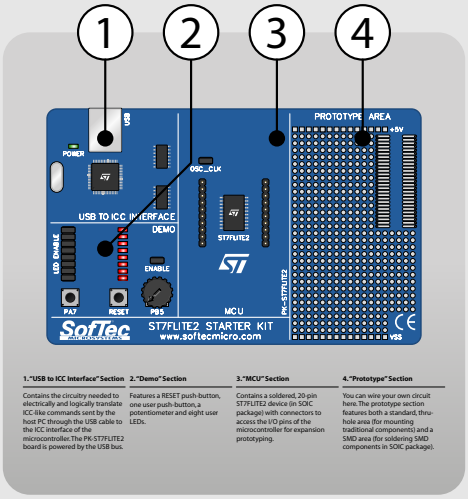
Instruction Set

Mnemonic	Description	Operation	Dest.	Source	Flags
ADC d, s	Add with carry, s to d	d ← d + s + C	A	mem	H, N, Z, C
ADD d, s	Add s to d	d ← d + s	A	mem	H, N, Z, C
AND d, s	Logical AND (d with s)	d ← d AND s	A	mem	N, Z
BCP s, d	Bit compare	(N, Z) ← s AND d	A	mem	N, Z
BRES d, b	Bit reset	d ← d AND (NOT (2^b))	mem	-	-
BSET d, b	Bit set	d ← d OR (2^b)	mem	-	-
BTJF d, b, rel	Jump if bit is false (0)	PC ← PC + rel IF (d AND (2^b)) = 0	mem	-	C
BTJT d, b, rel	Jump if bit is true (1)	PC ← PC + rel IF (d AND (2^b)) ≠ 0	mem	-	C
CALL d	Call subroutine	PUSH (PC); PC ← d	mem	-	-
CALLR d	Call subroutine relative	PUSH (PC); PC ← PC + d	mem	-	-
CLR d	Clear d	d ← 0	reg, mem	-	N = 0, Z = 1
CP d, s	Arithmetic compare	(N, Z, C) ← TEST (d - s)	reg	mem	N, Z, C
CPL d	Logical 1-complement of d	d ← d XOR FFh, or FFh - d	reg, mem	-	N, Z, C = 1
DEC d	Decrement d	d ← d - 1	reg, mem	-	N, Z
HALT	Halt	I ← 0	-	-	I = 0
INC d	Increment d	d ← d + 1	reg, mem	-	N, Z
IRET	Interrupt routine return	POP CC, A, X, PC	-	-	H, I, N, Z, C
JP d	Absolute jump	PC ← d	mem	-	-
JRA d	Jump relative always	PC ← PC + d	mem	-	-
JRT d	Jump relative always	PC ← PC + d	mem	-	-
JRF d	Never jump	-	mem	-	-
JRIH d	Jump Relative if Port INT pin = 1	PC ← PC + d IF interrupt line high	mem	-	-
JRIL d	Jump Relative if Port INT pin = 0	PC ← PC + d IF interrupt line low	mem	-	-
JRH d	Jump Relative if H = 1	PC ← PC + d IF H = 1	mem	-	-
JRNH d	Jump Relative if H = 0	PC ← PC + d IF H = 0	mem	-	-
JRM d	Jump Relative if I = 1	PC ← PC + d IF I = 1	mem	-	-
JRNM d	Jump Relative if I = 0	PC ← PC + d IF I = 0	mem	-	-
JRMI d	Jump Relative if N = 1	PC ← PC + d IF N = 1	mem	-	-
JRPL d	Jump Relative if N = 0	PC ← PC + d IF N = 0	mem	-	-
JREQ d	Jump Relative if Z = 1	PC ← PC + d IF Z = 1	mem	-	-
JRNE d	Jump Relative if Z = 0	PC ← PC + d IF Z = 0	mem	-	-
JRC d	Jump Relative if C = 1	PC ← PC + d IF C = 1	mem	-	-
JRNC d	Jump Relative if C = 0	PC ← PC + d IF C = 0	mem	-	-
JRULT d	Jump Relative if C = 1	PC ← PC + d IF C = 1	mem	-	-
JRUGE d	Jump Relative if C = 0	PC ← PC + d IF C = 0	mem	-	-
JRUGT d	Jump Relative if (C + Z) = 0	PC ← PC + d IF (C OR Z) = 0	mem	-	-
JRULE d	Jump Relative if (C + Z) = 1	PC ← PC + d IF (C OR Z) = 1	mem	-	-
LD d, s	Load s in d	d ← s	reg, mem	reg, mem	N, Z
MUL d, s	Multiply d by s	ds ← d * s	reg	reg	H = 0, C = 0
NEG d	Negate d (logical 2-complement)	d ← (d XOR FFh) + 1	reg, mem	-	N, Z, C
NOP	No operation	-	-	-	-
OR d, s	Logical OR (d with s)	d ← d OR s	A	mem	N, Z
POP d	Pop from the Stack	d ← (++SP)	reg	-	H, I, N, Z, C
PUSH d	Push onto the Stack	(SP--) ← d	-	reg	-
RCF	Reset carry flag	C ← 0	-	-	C = 0
RET	Subroutine return	POP PC	-	-	-
RIM	Reset interrupt mask	I ← 0	-	-	I = 0
RLC d	Rotate left through carry		reg, mem	-	N, Z, C
RRC d	Rotate right through carry		reg, mem	-	N, Z, C
RSP	Reset Stack pointer	SP ← reset value	-	-	-
SBC d, s	Subtract s from d with carry	d ← d - s - C	A	mem	N, Z, C
SCF	Set carry flag	C ← 1	-	-	C = 1
SIM	Set interrupt mask	I ← 1	-	-	I = 1
SLA d	Shift left arithmetic (equal to SLL d)		reg, mem	-	N, Z, C
SLL d	Shift left logical		reg, mem	-	N, Z, C
SRA d	Shift right arithmetic		reg, mem	-	N, Z, C
SRL d	Shift right logical		reg, mem	-	N = 0, Z, C
SUB d, s	Subtract s from d	d ← d - s	A	mem	N, Z, C
SWAP d	Swap nibbles	d (7:4) ↔ d (3:0)	reg, mem	-	N, Z
TNZ d	Test for negative and zero	(N, Z) ← TEST (d)	reg, mem	-	N, Z
TRAP	Software interrupt	PC ← PC + 1; PUSH PC, X, A, CC; PC ← trap vector	-	-	I = 1
WFI	Wait for interrupt	I ← 0	-	-	I = 0
XOR d, s	Logical exclusive OR (d with s)	d ← d XOR s	A	mem	N, Z

20-Pin SO Package



(HS): 20 mA High-Sink Capability
eix: Associated External Interrupt Vector



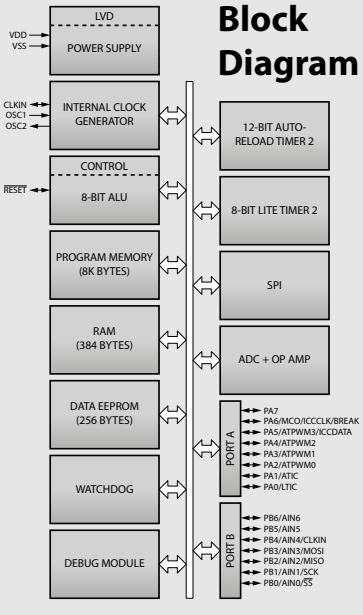
1."USB to ICC Interface" Section
Contains the circuitry needed to electrically and logically translate ICC-like commands sent by the host PC through the USB cable to the ICC interface of the microcontroller. The PK-ST7FLITE2 board is powered by the USB bus.

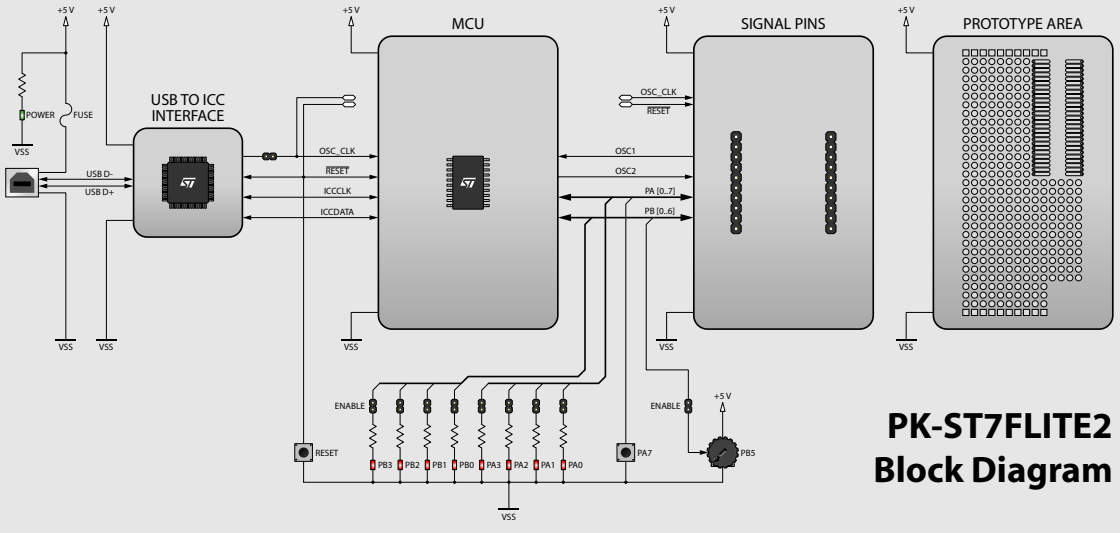
2."Demo" Section
Features a RESET push-button, one user push-button, a potentiometer and eight user LEDs.

3."MCU" Section
Contains a soldered, 20-pin ST7FLITE2 device (in SOIC package) with connectors to access the I/O pins of the microcontroller for expansion prototyping.

4."Prototype" Section
You can wire your own circuit here. The prototype section features both a standard, thru-hole area (for mounting traditional components) and a SMD area (for soldering SMD components in SOIC package).

Block Diagram





PK-ST7FLITE2 Block Diagram

PK-ST7FLITE2
Quickstart Tutorial

1 Start Working in Minutes!

This QuickStart Tutorial has been designed to get you started with the PK-ST7FLITE2 in minutes. You will setup the instrument and run your first application in less than 10 minutes.

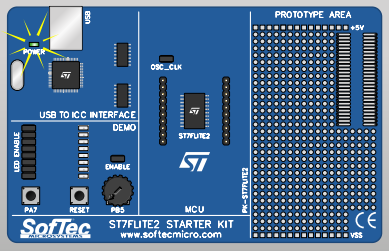
2 Install the Instrument Software

The PK-ST7FLITE2 System Software setup program is located on the SofTec Microsystems "System Software" CD-ROM provided with the instrument. The setup program will copy the required files (including the USB driver) to your hard drive.

To install the PK-ST7FLITE2 System Software, insert the SofTec Microsystems "System Software" CD-ROM into your computer's CD-ROM drive. A startup window will automatically appear. Choose **"Install Instrument Software"** from the main menu. Click on the **"Install PK-ST7 Series"** option. Follow the on-screen instructions.

3 Connect the Board to the PC

Connect PK-ST7FLITE2 to a free USB port on your PC. The green "POWER" LED on the instrument will turn on.



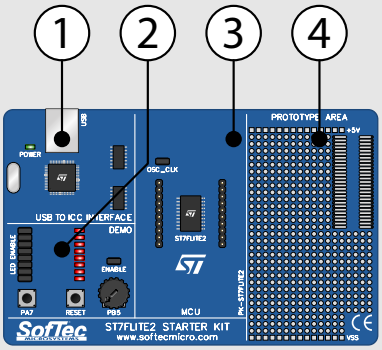
4 Found New Hardware Wizard

The first time PK-ST7FLITE2 is connected to the PC, Windows recognizes the instrument and starts the "Found New Hardware Wizard" procedure, asking you to specify the drivers to use for the instrument.

The procedure is slightly different on each version of Windows. On Windows XP, select the **"Install the software automatically"** option and click on the **"Next"** button.

Be sure not to specify any drive or optional location where to look for the driver, since it has already been installed on your hard disk by the PK-ST7 Series System Software setup.

Note: both Windows 2000 and Windows XP may issue a warning during the "Found New Hardware Wizard" procedure. This warning is related to the fact that the USB driver used by PK-ST7FLITE2 is not digitally signed by Microsoft, and Windows considers it to be potentially malfunctioning or dangerous for the system. However, you can safely ignore the warning, since every kind of compatibility/security test has been carried out by SofTec Microsystems.



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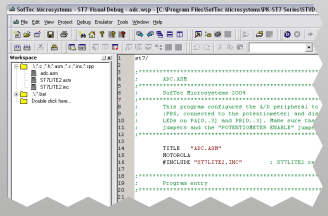
5 Run STVD7 and Open the Example

Start STMicroelectronics Visual Debug for ST7 (STVD7) by selecting **Start > Programs > SofTec Microsystems > PK-ST7 Series > STVD7**.

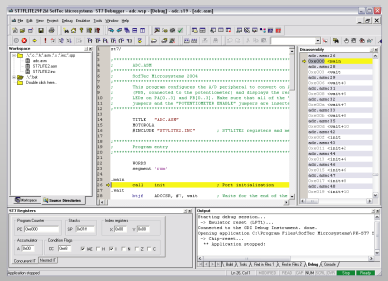
The first time you launch STVD7 you are prompted to enter some toolchain paths. Click **"Yes"** and confirm the default values by clicking **"OK"**. The STVD7 IDE will then open.

Choose **File > Open Workspace** from the main menu. Select the **"adc.wsp"** workspace file that is located under the **"\Program Files\SofTec Microsystems\PK-ST7 Series\STVD7\Samples\PK-ST7FLITE2\Asm\Adc"** directory. Click **"Open"**.



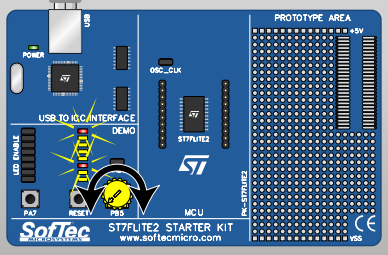
6 Start a Debugging Session

Select **Debug > Start Debugging** from the main menu. STVD7 will display the source code with the Program Counter pointing to the first instruction, alongside of the Disassembly window.



7 Run the Example

Select **Debug > Run** from the main menu. The program will be executed in real-time. By rotating the potentiometer on the demo board, you affect the results of the A/D conversion, and the binary value of each conversion is displayed on the LEDs.



8 Congratulations!

You have successfully completed this tutorial! You can now continue to experiment with the STVD7 user interface (more examples for the PK-ST7FLITE2 board—for both the Metrowerks and CosmicC compilers—are provided) and discover its potentialities (step commands, simple and complex breakpoints, watch windows, etc.) on your own.

Please also read carefully all of the PK-ST7FLITE2 documentation.

For the latest software releases, new products, new supported devices, discussion forums and FAQs, log on to

http://www.softecmicro.com/

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