



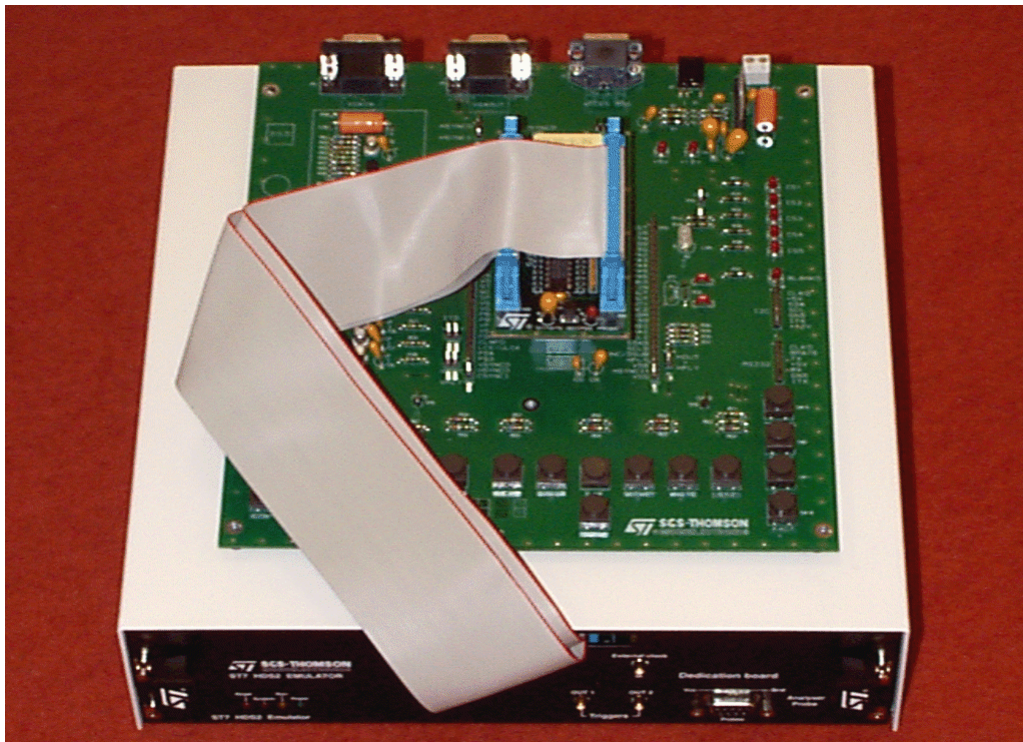
ST72xx-EMUx / ST7MDTx-EMU2

REAL-TIME DEVELOPMENT TOOLS FOR THE ST7 MCU FAMILY

FEATURES

- A common Hardware Development System mainframe supports the entire ST72xx family of MCUs, in conjunction with the appropriate ST7xxx-DBE Dedication Board Emulator.
- Real-time source level emulation, allows viewing and breakpoint setting on high level source code rather than on disassembled target code, for optimum user friendliness.
- 64 KBytes of user modifiable and configurable emulation RAM, allows memory mapping of all ST72 family devices as well as modelling hypothetical memory configurations.
- Unlimited breakpoints may be set for any op-code fetch or any address access, and conditions may be defined for the generation of 2 external synchronisation signals.
- 1K by 32-bit wide trace memory for Logic Analyser allows complex and sequential events to be defined on any combination of address and data, as well as 3 internal and 5 external logic signals.
- Logic Analyser events may trigger a breakpoint or simply define data capture parameters, in accordance with user preferences.
- Simple connection of emulator system to Host PC via RS-232 serial channel or via parallel port¹⁾
- Emulation system may be driven by Windows based GNU debugger software or DOS software running on host PC, allowing full control and monitoring of hardware resources.
- Multiple windows allow concurrent real-time display of source code, MCU resources, internal registers, trace data, etc.
- Log files allow storage and subsequent redisplay of any displayed screen for subsequent analysis.
- Command files can be used to execute a set of debugger commands in batch mode.
- Editable configuration files ensure tailoring of working environment to user preferences.

Note 1. On the ST72-EMU2 version of the Emulator..



OVERVIEW

The ST7 real-time development tools consist of various hardware and software components, which together form a flexible and sophisticated system designed to provide comprehensive development support for the ST7 family of MCUs.

The Hardware Development System (HDS) mainframe is common to all ST7 devices and, in conjunction with various Dedication Board Emulators (DBE), allows emulation and development of specific devices. Only the DBE and probe need to be changed to emulate a new ST72 family device.

The development system is controlled by a Host PC on which a choice of Windows based software may be run. The Host PC is simply connected to the Emulator Mainframe by means of an RS-232 serial link or a parallel port. The WGDB7 Windows GNU Debugger software suite is supplied as standard issue with the Emulator hardware, in addition to the conventional DOS ST7 Software suite, which includes a macroassembler, a linker/loader. Third party C Toolchain and Debugger software is also available. The Windows based debugger provides a user friendly and highly flexible interface which may be configured to precisely match the user's requirements. All emulator settings are accessible via the control software.

Once assembled, and/or compiled and linked, the application software may be downloaded to the real-time emulation memory, which can be configured, mapped and modified as required by the user. The device probe is then connected to the application target hardware in place of the MCU and real-time emulation of the target application can begin, thus allowing sophisticated testing and debugging of both application hardware and software.

User definable breakpoints allow the MCU to be halted when the application software accesses specific addresses, and/or addresses within a selected range, and/or on data fetch cycles. The user may then read and modify any register and

memory location. An on line assembler/disassembler is also available to ease debugging.

An important feature of the ST7 development system is that true source level debugging is possible, meaning code may be viewed at source level and breakpoints may be set on high level code, rather than on disassembled target code. This is much more meaningful to the user and ensures a more convivial and productive development environment.

A separate and concurrent Logic Analyser function is available. This hardware implemented function features 1KByte of 32-bit wide trace memory which allows events to be defined for any combination of address (16 bits) and data (8 bits), as well as according to the state of 3 internal and 5 external logic signals. Complex and sequential conditions may be defined, and all bits are maskable. The external signals are input from 5 probes which can be connected to the target hardware.

Trace memory events may be used as breakpoints or simply to trigger data acquisition according to user specified parameters, without halting the target system. Such a powerful tool enables the user to detect and trap virtually any pattern, and thus rapidly debug the target application.

Log files offer the ability to send any screen display to a text file. In particular, log files are very useful to save the contents of the logic analyser and/or the contents of data registers to be subsequently analysed or printed.

Command files can be used to execute a set of debugger commands in batch mode, to simplify and speed up the emulation session.

Finally, when the target program is fully debugged, the appropriate ST7 EPROM/OTP programming board can be used to program the EPROM/OTP version of the target device to allow stand-alone testing and evaluation.

ORDERING INFORMATION

DEVICE	PACKAGE	EMULATOR	DEDICATION BOARD
ST72E50/T50	QFP64	ST7250-EMU2	
ST72E72/T72	CSDIP56	ST7272-EMU	ST7272-DBE
ST72E77/T77	SO34/QFP64/SDIP42/SDIP56	ST7277-EMU2	
ST72E85/T85	QFP80	ST7285-EMU	ST7285-DBE
ST72E91L6/T91L6	SO28/DIP28	ST7291L6-EMU	ST7291L6-DBE
ST72E94/T94	SO28/DIP28	ST7294-EMU	ST7294-DBE
ST72E101	SDIP32/SO28	ST7MDT1-EMU2	
ST72E21X	SDIP32/SO28	ST7MDT1-EMU2	
ST72E251	SDIP32/SO28	ST7MDT1-EMU2	
ST72E121	SDIP42/TQFP44	ST7MDT2-EMU2	
ST72E311	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT2-EMU2	
ST72E331	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT2-EMU2	
ST72E272	SDIP32/SO34	ST7MDT4-EMU2	
ST72E37X	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT4-EMU2	
ST72E671	SDIP56/TQFP64	ST7MDT4-EMU2	

Notes:

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