



## ST7MDTx-EMU2

### REAL-TIME DEVELOPMENT TOOLS FOR THE ST7 MCU FAMILY

#### FEATURES

- A common Hardware Development System mainframe supports the entire ST7 family of MCUs, in conjunction with the appropriate ST7xxx-DBE Dedicated 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 ST7 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 synchronization signals.
- 1K by 32-bit wide trace memory for Logic Analyzer 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 Analyzer events may trigger a breakpoint or simply define data capture parameters, in accordance with user preferences.
- Simple connection of the emulator system to the Host PC via RS-232 serial channel or via parallel port<sup>1)</sup>
- Emulation system may be driven by a 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 ST7-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 ST7 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 STVD7 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 Analyzer 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 analyzer 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/FLASH programming board can be used to program the EPROM/OTP/FLASH version of the target device to allow stand-alone testing and evaluation.

**ORDERING INFORMATION**

DEVICE	PACKAGE	EMULATOR	DEDICATION BOARD
ST72E101/T101	SDIP32/SO28	ST7MDT1-EMU2	ST7MDT1-DBE
ST72C104	SDIP32/SO28	ST7MDT1-EMU2B	ST7MDT1-DBE2B
ST72E212/T212/E213/T213	SDIP32/SO28	ST7MDT1-EMU2	ST7MDT1-DBE
ST72C215/C216	SDIP32/SO28	ST7MDT1-EMU2B	ST7MDT1-DBE2B
ST72E251/T251	SDIP32/SO28	ST7MDT1-EMU2	ST7MDT1-DBE
ST72C254	SDIP32/SO28	ST7MDT1-EMU2B	ST7MDT1-DBE2B
ST72E121/T121	SDIP42/TQFP44	ST7MDT2-EMU2	ST7MDT2-DBE
ST72C124	SDIP42/TQFP44	ST7MDT2-EMU2B	ST7MDT2-DBE2B
ST72E311/T311	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT2-EMU2	ST7MDT2-DBE
ST72E331	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT2-EMU2	ST7MDT2-DBE
ST72C334	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT2-EMU2B	ST7MDT2-DBE2B
ST72E5XX/T5XX/E311R/T311R	TQFP64	ST7MDT2-EMU2B	ST7MDT2-DBE2B
ST72E272/T272	SDIP32/SO34	ST7MDT4-EMU2	
ST72E37X/T37X	SDIP42/TQFP44/SDIP56/TQFP64	ST7MDT4-EMU2	
ST72E671/T671	SDIP56/TQFP64	ST7MDT4-EMU2	

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