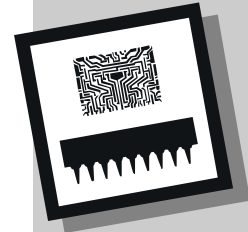
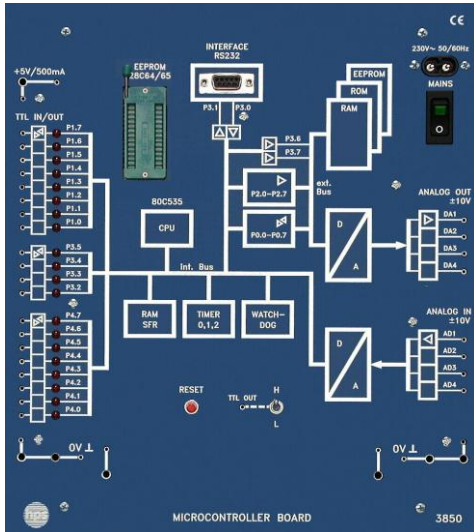


Digital Technology / Microcontroller Technology



MICRO-CONTROLLER BOARD

Type 3850



- Universal training system for microcontroller technology
- Control of the microcontroller by means of a terminal program
- Programming in BASIC and Assembler
- Communication with an IBM-compatible PC over RS 232 interface
- 20 digital inputs or outputs, 4 analog inputs and 4 analog outputs
- 32 KB ROM, 32 KB RAM, 8 KB EEPROM

only available on request

With the MICROCONTROLLER BOARD hps System-Technik has developed a training system which is perfectly suitable to introduce into microcontroller technology.

A Siemens microcontroller (80535) which is part of the processor family 8051 has been chosen as the basic module.

In addition to the MICROCONTROLLER BOARD, an IBM-compatible PC is necessary to complete the training system. Connection is made over an RS 232 interface.

The delivered software provides the development environments μ Vision2 (Brand: Keil Software) and BASCOM LT DEMO (Brand: MCS-Electronics). Since these programs are free demo versions, the size of self-programmed files is limited to 2 kbyte.

μ Vision2 provides an Assembler, an ANSI-C-Compiler, a Linker and a Debugger.

BASCOM LT DEMO is a BASIC-compiler, which converts the interpreter code to a faster machine code. The BASIC-codes could be executed in the terminal emulators (monitor mode).

For the data transfer of the compiled programs to the MICROCONTROLLER BOARD the programs 8051winLight or 8051win (Brand: SIMulations-SOFTware) could be purchased.

20 TTL inputs or outputs are freely programmable (per bit or per byte) on the MICROCONTROLLER BOARD.

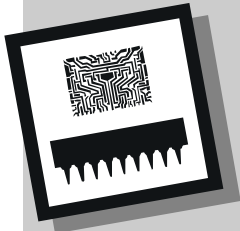
Apart from these functions, it is possible to compare operations at the outputs, to control the timers and to use it as external interrupt source. The three timers are configured as counter, prescaler, timer, event recorder and gate time counter.

The AD converter has a resolution of 10 bits. It is reached in two steps of 8 bits each and realized over the software. It is also possible to choose a resolution of 8 bits, while the converting time in this case is 13 μ s.

The AD converter is selected via four analogue inputs in multiplex mode. Direct, register or bit addressing of the internal RAM is possible.

Other modules on the MICROCONTROLLER BOARD are the 32 KB RAM (program and data storage), the 32 KB ROM with a terminal emulator, the 8 KB EEPROM for data storage (optional), as well as four DA converters for the output of analogue voltages.

only available on request



MICRO- CONTROLLER BOARD

Type 3850

Mechanical Data

- Material of the front panel:
Laminate (5 mm), matt blue
- Rear front:
Grey plastic cover (angled)
- Dimension: 266 x 297 x 90 mm (w x h x d)
- Weight: approx. 2.2 kg

Accessories Included

- Software:
 - Evaluations-Software μ Vision2
Brand: Keil Software (English-version) and
 - BASCOM LT DEMO
Brand: MCS-Electronics (English-version)
- Serial interface cable, 9-pin (SUB-D),
Length: 2 m

Accessories Required

- IBM-compatible computer with RS 232 interface
(Windows 98 or higher)

Accessories Recommended

- **Experiment manual:**
Microcontroller Technology (V 0150)
- EEPROM 28C64 or 28C65 (Type 3850.4)
- 8051winLight (Brand: SIMulations-SOFTWARE, available in German- and English-version): Data communication software for compiled programs to the MICROCONTROLLER BOARD.
Or 8051win (Brand: SIMulations-SOFTWARE, available in German- and English-version): With additional simulation of microcontroller on the PC.

Digital Technology / Microcontroller Technology

Technical Data

Mains connection

- Mains voltage: 230 V AC / 115 V AC (110 V AC)
- Mains frequency: 50 ... 60 Hz
- Power consumption: 40 VA

Voltage source (for connection of external equipment)

- 5 V / 500 mA
(connection through 2 mm or 4 mm jacks)

MICROCONTROLLER: Type Siemens 80C535

TTL IN / OUT (connection through 2 mm jacks)

- 20 inputs or outputs (bit addressable)
- State indication by LED
- Fan-out: 3
- Protected against overvoltage;
Input voltage: max. 24 V;
Input current: max. 180 mA

ANALOG IN (connection through 2 mm jacks)

- Inputs: 4 (multiplex mode)
- Input voltage: -10 V ... +10 V –
- Input resistance: 1 M
- Converting time: 8 bit within 13 μ s
- Resolution: max. 10 bit

ANALOG OUT (connection through 2 mm jacks)

- Outputs: 4
- Output voltage: -10 V ... +10 V
- Output current: 20 mA
- Converting time: 800 ns

Memories

- 32 KB ROM
- 32 KB RAM
- 8 KB EEPROM (optional); Type: 28C64 or 28C65;
Access time: 200 ns;
can be plugged to 28-pin DIL IC socket base on the front side, with quick-fastening device

RAM, SFR: internal 256-Byte-RAM and control register

TIMER: 3 freely programmable timers

WATCHDOG: for processor control

INTERFACE RS 232: serial interface RS 232,
for connection to the PC

RESET: to initialise the controller

START-RAM:
starts the program in the RAM from address 0

Subject to technical modifications.