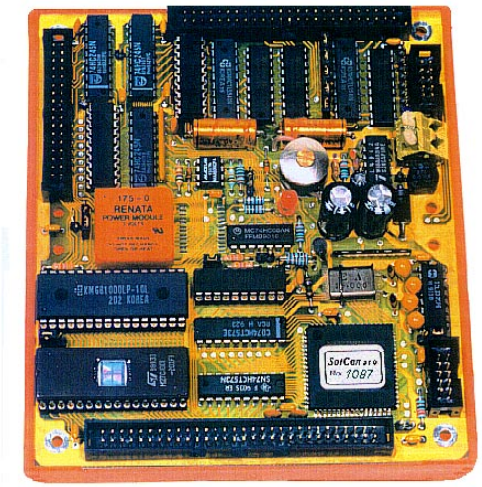
Control Units
KITV40/16
Industrial Control Unit 16bit, 16MHz

SofCon® AUTOMATIZAČNÍ TECHNIKA

2.1

- V40 processor, 16MHz
- 128 to 512 kB RAM, battery stand-by
- 128 to 512 kB EPROM/FLASH memory
- 1 serial asynchronous channel
- real-time clock
- watch-dog
- IO bus, P bus, COM bus, System bus
- 12 to 24V AC/DC power supply



Basic Characteristics

The KITV40 is a small single-board computer suitable for use as a universal control unit of industrial control systems. It is based on a 16-bit V40 processor, which is program-compatible with the Intel 86 processor (in real mode, it is compatible with the Intel 286 processor). There are several different interfaces to connect expansion cards and modules. These are: processor system bus (can be converted to an ISA bus), IO bus (bus for the connection of peripheral boards from the *SofCon* kit), P bus (3-byte parallel input/output), and a serial communication line. These interfaces can connect to various digital, analog, and communication cards and modules from the KIT set, which expand the basic hardware and allow the connection of many different devices. The serial communication line creates an incomplete RS232 bus; it only contains TxD and RxD, or consists of a Com bus. The Com bus is a full serial interface at 5V level, which can be converted to various serial interfaces (RS485, full RS232, insulated, uninsulated…) using extension modules.

The board also includes an accurate real-time clock, RAM memory, ROM (FLASH, EPROM) memory, a battery for memory and clock stand-by supply, and a Watchdog circuit.

The delivered software supports all the peripheral boards from the *SofCon* kit and allows easy and quick creation and debugging of application programs. Programs are written and debugged either in the integrated Borland Pascal 7 environment, or in the KitBuilder. Both environments generate programs in processor real mode. User programs can be downloaded to the KitV40 processor board, to the Flash memory, over serial communication.

The entire integrated compiler environment is used for programming in Pascal. It allows debugging the entire application, including accesses to hardware. The delivered expansion libraries include drivers for all complex peripheral boards, a package for terminal control, a package of communication programs, a real-time operating system, RETOS, to run parallel tasks, libraries for work with the Int08 system timer, a library for work with flash memories, control libraries, and other useful programs. The libraries are delivered as .tpu and section interface as default. Certain selected libraries are also delivered in their source format.

The KIT-BUILDER is a programming and development graphic environment consisting of a compiler and interpreter for the KitBasic language, which has a syntax similar to Pascal. It allows the simple and quick creation of control applications with less requirements for the programmer than the Pascal environment. The KIT-BUILDER also supports peripheral boards from the *SofCon* kit and various serial communication protocols.

Software manuals describing each library separately and a manual for the KIT Builder, ReTOS Debugger, MCP BIOS, ReTOS, and others are available for the KIT set. Each peripheral board has its own hardware manual. All manuals and technical papers are available on the SofCon CD.

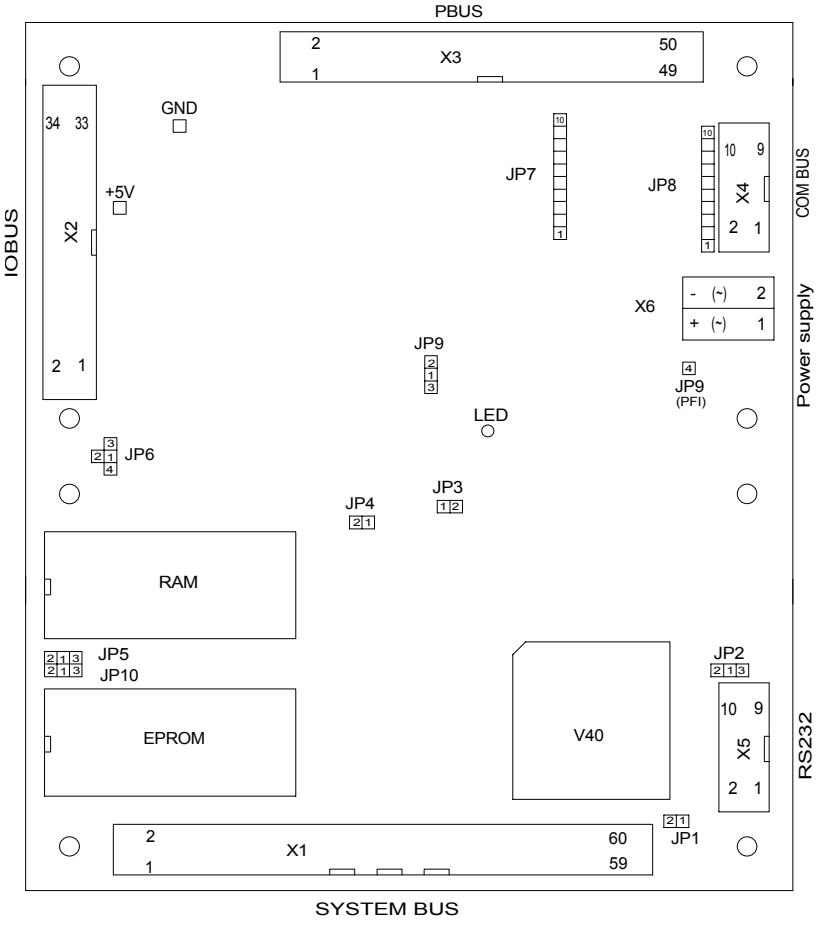
Ordering Information

The order must specify the memory size of RAM and EPROM or FLASH.

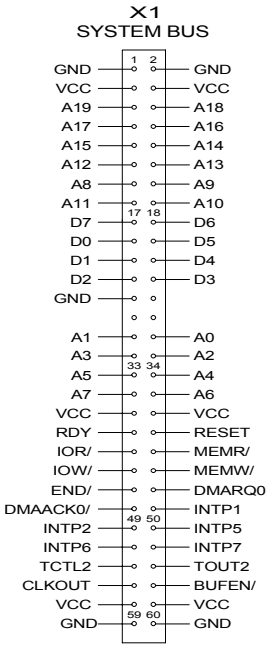
Technical Data

Operation	Continuous
Power supply	12 to 35 VDC including ripple, 15 to 26 VAC, 50 to 60 Hz
Consumption	Max. 50 mA/24V DC
Environment	Industrial without air-conditioning, without aggressive gases or fumes
EMC	Class A device according to CSN EN 55 022 for an industrial environment, emissions according to CSN EN 50 081-2.
Ambient operating temperature	0 to 50°C, relative air humidity 40 to 95% at 25°C
Processor	V40 from NEC, 16 MHz (i8086 + 8259 + 8254 + 8251 + 8237)
RAM memory	128 to 512 kB with lithium battery stand-by supply, a part of the memory can be protected against accidental writing
ROM/FLASH memory	128 to 512 kB
Day clock	RTC 64613 circuit with battery stand-by
WatchDog	MAX 690A safety circuit
Indication of processor operation	LED
Serial channel	Serial asynchronous channel i8251 with max. transfer rate 19200 Bd, Communication interface is incomplete (TxD, RxD) RS232 (X5 connector) or COM bus (X4 connector with TTL levels)
SYSTEM bus	Interface designed for connection of the most complex peripheries— Module Expander, e.g. PC ISA bus converter
IO bus	Interface designed for connection of *SofCon* expansion IO cards
P bus	Interface for connection of P modules and slow peripheries
COM bus	Interface for connection of COM modules, serial communication modem signals can use some signals of the P bus interface (specified with jumpers JP8)
Dimensions	122 x 138 x 25 mm

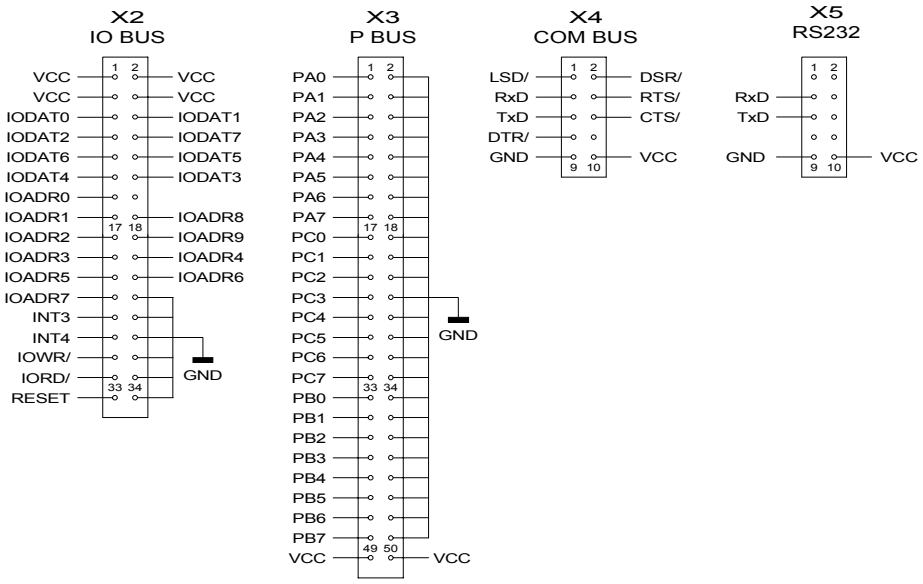
Jumper and connector location



Signals on X1 connector



Signals on X2-X5 connectors



Jumper adjustment (jumper orientation corresponds to the following overview)

JP1 (2 1)
- TCLK, productive testing
- operation
- testing

JP4 (2 1) — for Eprom (JP10) / for Flash (JP10)
- Write protect RAM — Bios monitor On-Off
- recording into RAM forbidden — After Bios monitor reset
- recording into RAM allowed — After application program reset

JP2 (2 1 3)
- signal RxD from RS232 (X5) / from COMBus (X4)
- communication via RS232 (X5)
- communication via COMBus (X4)

JP5 (2 1 3) — ROM size
- 64kB, 128kB
- 256kB, 512kB

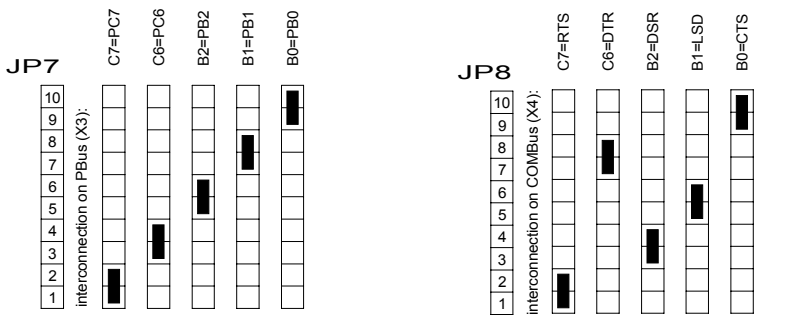
JP3 (1 2)
- reset of processor
- reset
- operation

JP6 (3 / 2 1 / 4) — RAM size
- 128k x 8
- 32k x 8
- 512k x 8

JP10 (2 1 3)
- ROM type option
- EPROM
- FLASH

JP9 (2 / 1 / 3 / 4) — source of non-maskable disconnecting
- ignored
- Vcc drop
- from PFI signal (jumper wire) — PFI

Signal interconnection C7, C6, B2, B1, B0 ports PBusu on PBus (X3) or on COMBus (X4)



Note: JP7 and JP8 cannot be parallelly interconnected on positions corresponding to the same line of the table.

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