EcoARM9EP9302

Short Description

1. General

ECoARM9EP9302 is really complete computer with a powerful processor ***EP9302 ARM9 CPU***, lot of memory and several interfaces like ***USB*** host and device, Ethernet ***LAN*** interface, ***SD***-Card, ***PC/104*** and so on.

It is an economical and indigenous replacement for expensive "embedded computer boards". Thanks to the ***PC/104*** interface, you can directly connect almost any kind of ***PC/104*** compatible ***I/O*** card. This combination gives you lot of processing power + ***I/O*** – hence it is perfect solution for Industrial Automation.

The board also provides lot of non-volatile storage options: you may connect a pen-drive to ***USB*** host interface, additional ***LAN*** interfaces, ***WiFi*** devices and so on. ***USB*** pen-drives are readily and cheaply available with ever growing capacities. Alternatively, you may connect very cheap ***SD*** memory card directly to the on-board ***SD***-card interface.

Although stand-alone (no ***OS***) applications can be run on ***ECoARM9EP9302***, it is primarily intended to run Linux based applications. The ***ECoARM9EP9302*** ships with Linux pre-installed. As described in the "specifications" section below, the board has many interfaces – including ***RS232*** and Ethernet. During development, these 2 interfaces are very useful.

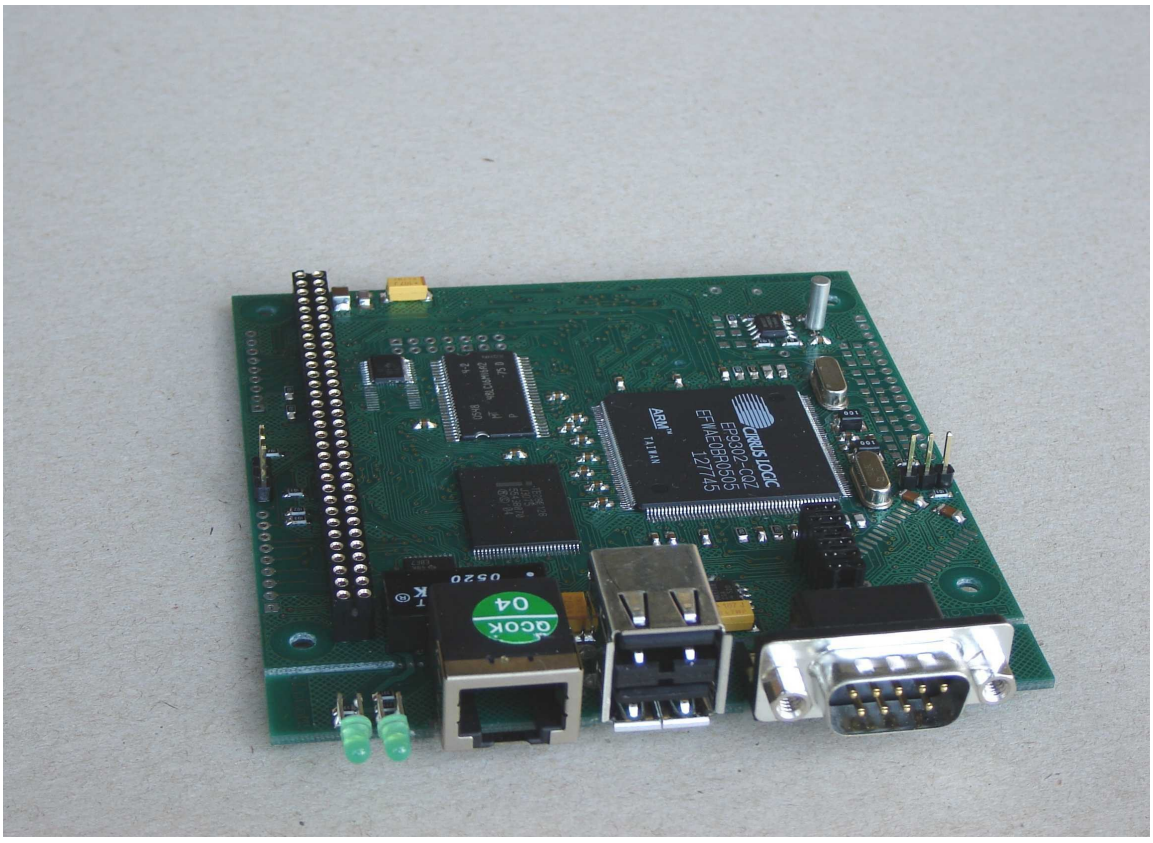

Fig. 1

The top view of the ***ECoARM9EP9302*** is show in Fig.1. Although ***ECoARM9EP9302*** does not logically implements ***PC/104*** expansion buses, it has the same footprint as a ***PC/104*** module. This allows the user to create and emulate and develop any ***PC/104*** compatible interfaces. ***ECoARM9EP9302*** provides versatile interfaces, some ***I/O*** pins, that too ***TTL*** (3.3V level) without optical isolation. Thanks to ***PC/104*** interface, ***ECoARM9EP9302*** provides flexibility to expand. It is very easy and convenient to add ***PC/104*** modules for ***I/O***, for display interface (***LCD*** or ***VGA*** monitor) and so on.

2. Specifications

EcoARM9EP9302 is based on the Cirrus ***EP9302 CPU***, which forms the core of the ***SBC***. This is a low-cost, highly integrated ***SoC*** that includes an ***ARM920T*** processor core, a "MaverickCrunch" engine, and numerous peripheral interfaces. The block diagram of the CPU is shown in Fig.2.

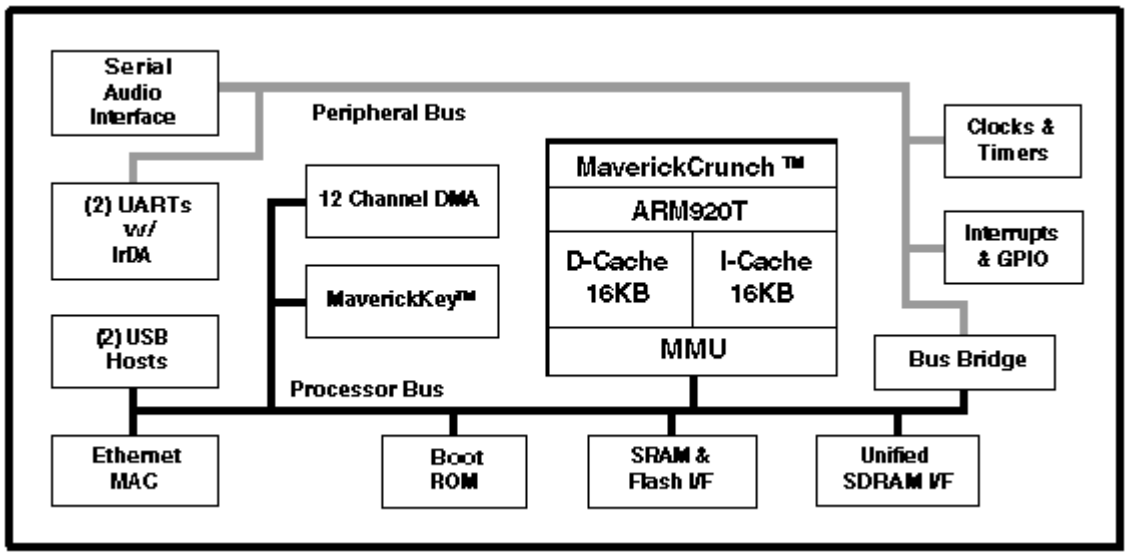

Fig. 2

Based on this the specifications of the ***EcoARM9EP9302*** are:

- ***200MHz ARM9 CPU*** includes MaverickCrunch
- ***PC/104*** expansion bus
- 32MB ***SDRAM***
- 16MB ***NOR*** Flash
- 1 10/100 Ethernet
- 2 ***USB*** 2.0 Host (12 Mbit/s max) (can connect pen-drive, digicam, printer and many other peripherals…)
- 1 ***SD*** card socket
- 2 ***COM*** ports with option for ***RS232*** / ***RS422*** / ***RS485*** / 3.3V ***TTL*** (user selectable)
- ***DIO*** lines
- Watchdog timer, ***SPI*** bus
- Matrix Keypad and text ***LCD*** support
- Optional Temp Sensor, ***RTC*** via ***SPI***
- Optional **WiFi** via ***USB***
- Low-power (400mA @ 5V)
- Fanless -40° to +70°C, +85°C 166Mhz
- Small size: 3.8 x 4.5 inches

- Redboot bootloader (Optionally u-boot)
- Linux out-of-the-box
- Python out-of-the-box
- pppd out-of-the-box
- iptables out-of-the-box
- net-snmp out-of-the-box

3. Software

EcoARM9EP9302 ships with a lot of software out-of-the-box. This allows users to write stand-alone or Linux based applications to run on this board. High level language - Python allows to deploy very quickly new applications. Python interfaces with the hardware are provided.

Short description of the pre-installed packages follows:

busybox v1.1.3
Currently defined functions:

[, [[, ash, awk, basename, bunzip2, busybox, bzcat, cal, cat, chmod, chroot, chvt, clear, cmp, cp, crond, crontab, cut, date, dc, dd, deallocvt, df, dirname, dmesg, du, dumpkmap, echo, env, expr, false, fdisk, find, fold, free, freeramdisk, ftpget, ftpput, getopt, gunzip, gzip, halt, hdparm, head, hexdump, hostid, hostname, httpd, hwclock, ifconfig, ifdown, ifup, inetd, init, install, kill, killall, klogd, last, length, linuxrc, ln, loadfont, loadkmap, logger, logread, losetup, ls, makedevs, md5sum, mdev, mesg, mkdir, mkfifo, mknod, mkswap, mktemp, more, mount, mv, nc, netstat, nslookup, od, openvt, patch, pidof, ping, pivot_root, poweroff, printf, ps, pwd, rdate, realpath, reboot, renice, reset, rm, rmdir, route, run-parts, sed, seq, setkeycodes, sh, sha1sum, sleep, sort, start-stop-daemon, strings, stty, swapoff, swapon, sync, syslogd, tail, tar, tee, telnet, telnetd, test, tftp, time, top, touch, tr, traceroute, true, tty, udhcpc, umount, uname, uncompress, uniq, unzip, uptime, usleep, vi, watch, wc, wget, which, xargs, yes, zcat

OpenSSL v0.9.8k
NET-SNMP v5.4.2.1
pppd v2.4.4
iptables v1.4.2

Python 2.4.5

all standard modules
Medusa v1.2
Quixote v2.5
Processing v0.52

aka:

BaseHTTPServer Bastion CDROM CGIHTTPServer ConfigParser Cookie DLFCN DocXMLRPCServer HTMLParser IN MimeWriter OpenSSL-(package) Queue SimpleHTTPServer SimpleXMLRPCServer SocketServer StringIO TYPES UserDict UserList UserString _LWPCookieJar _MozillaCookieJar __builtin__ __future__ _bisect _bsddb _codecs _codecs_iso2022 _csv _curses _curses_panel _hashlib _heapq _hotshot _locale _multibytecodec _random _socket _sre _ssl _strptime _symtable _testcapi _threading_local _weakref aifc anydbm array asynchat asyncore atexit audiodev audioop base64 bdb binascii binhex bisect bsddb-(package) cPickle cStringIO calendar cgi cgitb chunk cmath cmd code codecs codeop collections colorsys commands compileall compiler-(package) cookielib copy copy_reg crypt csv curses-(package) datetime dbhash decimal difflib dircache dis distutils-(pakcage)

doctest dumbdbm dummy_thread dummy_threading email-(package) encodings-(package) errno exceptions fcntl fcrypt filecmp fileinput fnmatch formatter fpformat ftplib gc getopt getpass gettext glob gopherlib grp gzip hashlib heapq hmac hotshot-(package) htmlentitydefs htmllib httplib ihooks imageop imaplib imghdr imp imputil inspect itertools keyword linecache linuxaudiodev locale logging-(package) macpath macurl2path mailbox mailcap markupbase marshal math md5 medusa-(package) mhlib mimetools mimetypes mimify mmap modulefinder multifile mutex netrc new nntplib ntpath nturl2path opcode operator optparse os os2emxpath ossaudiodev parser pdb pickle pickletools pipes pkgutil platform popen2 poplib posix posixfile posixpath pprint processing-(package) profile pstats pty pwd py_compile pyclbr pydoc pyexpat pysqlite2-(package) quixote-(package) quopri random re readline reconvert regex regex_syntax regsub repr resource rexec rfc822 rgbimg rlcompleter robotparser sched select serial-(package) sets sgmllib sha shelve shlex shutil signal site smtpd smtplib sndhdr socket sre sre_compile sre_constants sre_parse stat statcache statvfs string stringold stringprep strop struct subprocess sunau sunaudio symbol symtable sys syslog tabnanny tarfile telnetlib tempfile termios test_hashlib textwrap this thread threading time timeit timing toaiff token tokenize trace traceback tty types tzparse unicodedata unittest urllib urllib2 urlparse user uu uuid warnings wave weakref webbrowser whichdb whrandom xdrlib xml-(package) xmllib xmlrpclib xxsubtype zipfile zipimport zlib

bootloader: redboot (u-boot optionally)
Compiler: GCC-4.1.1 from Cirrus Logics -> 4.1.1-920t No MaverickCrunch support included
kernel: Linux localhost 2.6.20.4 #4 PREEMPT
access: via telnet no passwd login and users implemented (optionally this can be included)
file system: jffs2
system disk space: 13.9M non compressed
compression: jffs2
used virtual space: 15M
Free: 3.2M non compressed removing some linux software features increases the available free space