

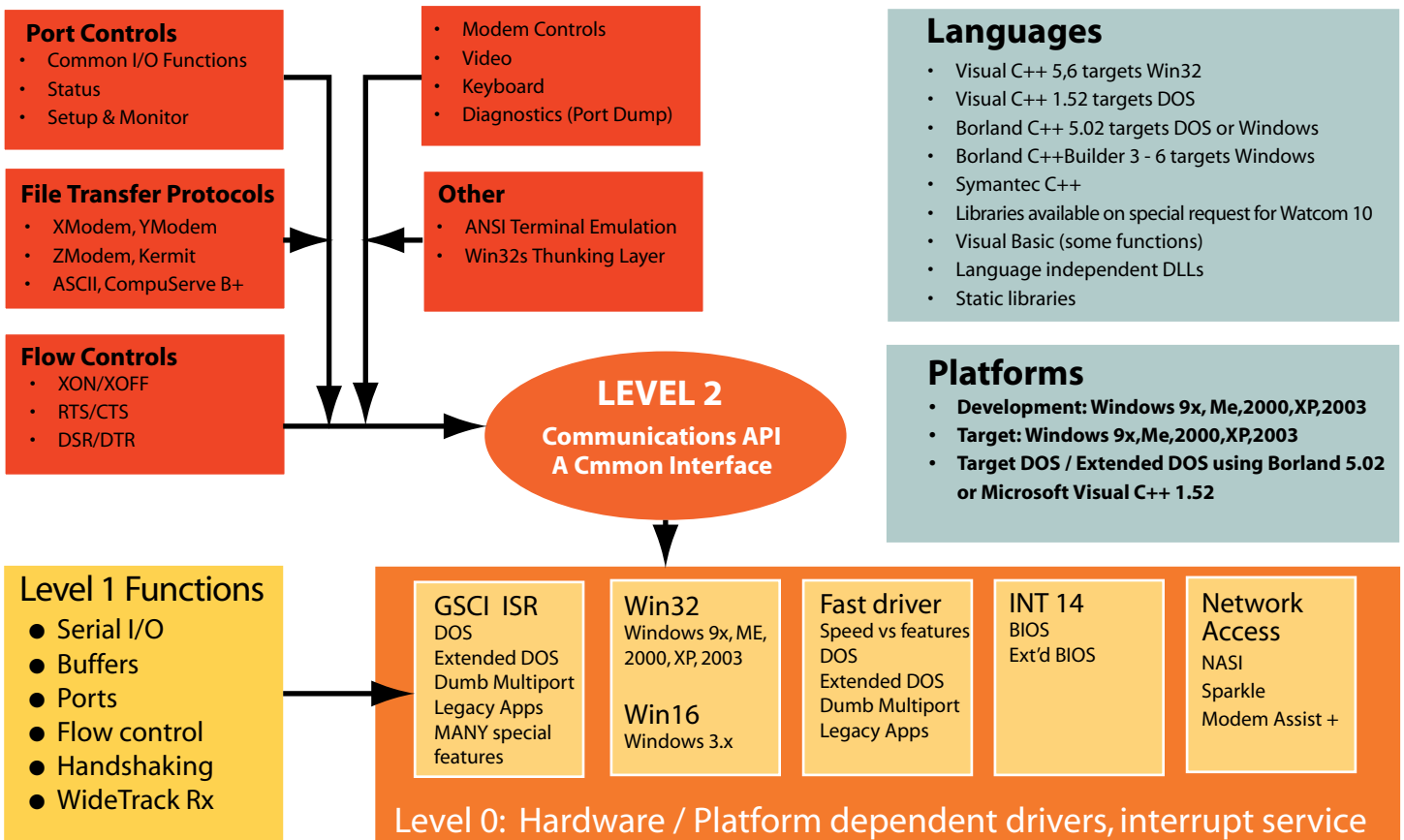


Greenleaf CommLib 5.2 Level 2

Supports Windows, DOS, with Port, Terminal & File Transfers

More Features in CommLib 5.26

- ❑ Level 2's consistent API for all supported hardware and platforms uses function pointers (virtual functions) for device independence—eases your programming and porting.
- ❑ To change hardware supported, just change PortOpen...() call.
- ❑ Supports Windows XP, 2000, Server 2003 NT 4, 98 SE, 95 OSR2, ME, and with compatible compiler, MSDOS and Extended DOS.
- ❑ ANSI terminal emulation, new video custom control also supports TextWindows, Windows GUI, and MSDOS.
- ❑ XModem/CRC, XModem-G, -1K, -1K-G, YModem, YModem-G, YModem Batch, ZModem with crash recovery, 16 or 32 bit CRCs, abort on lost carrier, many other features.
- ❑ Kermit, CompuServe B+, and ASCII file transfers with options.
- ❑ Block() prevents data errors during disk access, even at 115.2 Kbaud and above. Greatly aids ZModem transfers.
- ❑ Recursive subdirectory search engine supports wildcard file transfer specifications.
- ❑ XON/XOFF, RTS/CTS, and DSR/DTR handshaking.
- ❑ Drives numerous unintelligent and intelligent multiport boards from major suppliers. You can even mix board types in a single PC!
- ❑ Install...() and Remove...() provide easy setup for each type of supported multiport board.
- ❑ BIOS and EBIOS interrupt 0x14 support, HP95LX support.
- ❑ Baud Rates to 304.6 Kbps.given hardware support.
- ❑ Unlimited number of simultaneous ports open in a system.
- ❑ Supports Borland PowerPack and VROOM, 16 and 32 bit Tenberry Software DOS/16M and DOS/4G, Phar Lap TNT 7.0 and Run 286 DOS Extenders.
- ❑ Supports Visual C++ 5,6, 7.1, Symantec C++, Borland C++ 5.02, Borland C++Builder 3,4,5, and 6, and Visual Basic.
- ❑ Over 40 functions just for modem control.
- ❑ Extensive support for 16550 and higher UART FIFO modes.
- ❑ CommLib enhanced apps restore state of serial port when app ends.
- ❑ Hundreds of Level 1 functions support Greenleaf Standard Communications Interface (GSCI) for unparallelled capability for MSDOS and embedded apps.
- ❑ Complete set of video and keyboard routines with Ctrl-Break handler.
- ❑ Hundreds of compilable example programs included, all with source, for DOS and Windows.
- ❑ BUILD utility lets you quickly rebuild any of the libraries using your compiler—enhances maintainability.



Greenleaf CommLib 5.26

Over 450 public functions and macros, providing powerful tools for all aspects of asynchronous serial communications programming for Windows and MSDOS, including 16- and 32-bit Extended DOS. Supports all popular C++ compilers. Includes pre-built static and dynamic libraries for most compilers including debug versions. BUILD utility lets you rebuild libraries, even after changes in the source code.

What Others Say

Greenleaf CommLib is used in mission-critical installations by companies like IBM, EDS, AT&T, GTE, Rockwell Int'l, Sandia National Labs, Laurance Livermore Labs, GE. Thousands of communications consultants and developers have told us that "Greenleaf and Serial Comm are synonymous."

The prestigious Boston Computer Society says: *"The Greenleaf CommLib is so well documented....it is easy for beginners yet complete for seasoned users."*

Ken Baldry of Art & Science Ltd. says: *"Systems using Greenleaf libraries are making us rich!"*

Jim Stephenson, president of JGS Enterprises says: *"We use the Functions library in every program we write and CommLib in programs that require RS=232. Both have saved considerable time."*

Supports Many Kinds of Hardware

CommLib supports almost any kind of serial comm device you can plug into a PC or an embedded system. If the Windows Device Manager lists the port, CommLib can use it. This is true whether the UART is physically local or remoted over Ethernet, USB, or another high speed pipe.

There is one exception: a combination of hardware and software (the prime example is "WinModem") that does not properly represent a 16550 or compatible UART. Other examples of hardware that CommLib may have difficulty with are certain "dumb" multiport boards. Exceptions to this last are boards such as Digi's legacy boards and some others for which CommLib provides Setup...Board() and Remove...Board() functions that configure CommLib to handle the specific boards.

CommLib supports all mainline UART devices such as the 8250, 16650, 16750, 16850, 16950 or multiple packages of one of these such as a 16754 (four 16750s in a single package configuration)

For DOS, CommLib's innovative GSCI driver (Greenleaf Standard Communications Interface) provides a great many unique features found nowhere else—such as discarding null characters, controlling whether loss of CTS, DSR, or CD hold Rx inbound data—all programatically enableable and implemented in the interrupt service routine.

For Windows, most intelligent multiport boards, serial ports located on Device Server type hardware (via Ethernet or USB) are handled by interfacing with the drivers supplied with the hardware.

File Transfer Features

We're justifiably proud of our file transfer engines; they've been honed by hard use in thousands of installations, countless months of formal beta testing, and the critical court of public appeal, so that (for example) our ZModem implementation is considered by many to be the reference implementation. It turns out that public domain protocols such as XModem, YModem, ZModem, Kermit, etc. are often "tweaked" by developers who want "just a little difference" and this change, not reviewed by peers, often undocumented, can get people into trouble. Consider the nightmare of maintaining a program written ten years ago using some implementation of ZModem. How do you do it? Yes, by comparison to some things such as USB, TCP/IP, etc., they're simple protocols. That's if you're not the one trying to figure out what is breaking transfers.

But the folks who are still buying CommLib after 23 years and dozens of revisions on the market will tell you they buy it because they trust it. So it's not just us saying "it's the reference implementation..." — it's the repeat customers, word of mouth has gotten around, and CommLib is trusted.

A few features that are standard across all supplied protocols are:

- Idle routine (user function) called at least once for each block sent or received.
- Capability to print status reports on each block in or out.
- Configurable Abort key checked each block in or out.

Documentation

Most software is designed, tested, then the documentation is written. CommLib's development and documentation teams worked as an organic entity so that there are tips in the docs that a tech writer would not think to add—and code that writers asked about. We ship a 500 page PDF manual with CommLib; in addition there are hundreds of examples for each platform—source code that you can compile. The BUILD utility comes with source and documentation so that you can tailor it to your needs, though you won't need to for all popular compilers.

Commitment & Growth

Greenleaf CommLib was the first serial communications library for the PC. Released in 1984 on a dare by a customer of one of our earlier products, CommLib has gone through more testing and use than any other. The others come and they go, but CommLib just keeps getting better. We plan to keep it that way.

Check out our other serial comm products: Greenleaf Comm++ (CommLib in C++), CommX (ActiveX controls for Port, Terminal, and File Transfer, and Greenleaf ViewComm Async and ViewComm Viewer (data monitors and script driven protocol analyzers). In addition, our ViewComm Ethernet is a full-featured Ethernet Protocol Analyzer.

Some of CommLib's over 450 functions

Port Open, Close, Configure, Change Parameters

- Open port for Greenleaf Standard Comm Interface (GSCI) driver: standard and some non-intelligent multiport boards.
- Open port for Windows 32-bit
- Open port for Windows 3.x
- Open port for NASI interface driver
- Open port for Greenleaf Fast driver
- Open port for FOSSIL driver
- Open Port for BIOS driver
- Open port for Extended Bios driver
- ...,Over a dozen additional Open Port functions for various multiport & special drivers
- Install and Remove setup functions for all supported dumb multiport boards.
- Close Port (any driver)
- Change I/O parameters (any driver)
- 5 Sparkle configuration functions

Level 2 I/O and Handshaking

- Read a character, string, block
- Peek ahead at character
- Write a character, string, block
- Send break signal
- Set or clear RTS and DTR
- Enable / disable RTS/CTS handshaking
- Enable / disable XON/XOFF flow control

Level 2 Status & Control

- Clear line errors
- Has Break signal been received?
- Is CD asserted? CTS? DSR?
- Framing error occurred?
- Get all line status bits
- Get all modem status bits
- Receiver overrun occurred?
- Parity error occurred?
- Is Ring Indicator asserted?
- Clear Rx buffer
- Clear Tx buffer
- Is Rx Buffer empty? Full?
- Is Tx Buffer empty? Full?
- Space free in Rx buffer? Tx buffer?
- Space used in Rx buffer? Tx buffer?
- Return name of ASCII control character
- Assign IRQ priority for port
- Return Error code's ASCII name

Level 2 Modem Functions

- Answer Phone
- Dial phone number
- Go online
- Repeat last command
- Input string from modem
- Set Wait for 'OK'
- ...Over 35 more modem functions

Level 2 File Transfer Functions

- Set file transfer options (any protocol)
- Receive file(s) (any protocol)
- Send file(s) (any protocol)
- Recursive subdirectory search engine with wildcard expansion
- Receive ASCII file(s)
- Send ASCII file(s)
- Respond to ENQ from CompuServe host
- CompuServe B+ file transfer
- Receive Kermit file(s), standard options
- Receive Kermit file(s), custom options
- Send Kermit file(s), custom options
- Send XModem file
- Receive XModem file
- Receive XModem-1K file with 16-bit CRC
- Send XModem-1K file with 16-bit CRC
- Many other XModem alternatives including -G, -1K-G, Checksum
- Send YModem file(s) with options
- Receive YModem file(s) with options
- Send YModem-G file(s) with options
- Receive YModem-G file(s) with options
- Send ZModem file(s) with options, 32-bit CRC
- Receive ZModem file(s) with options

Level 1 GSCI Functions

- Does alert flag shut down transmission and reception?
- Set / Clear DTR
- Polled Mode Read Character
- Select Interrupt Mode logic
- Send Break Signal
- Check for Break Signal
- Get buffer status
- Setup to check or ignore conditions
- Clear (purge) buffers
- Set UART FIFO trigger level

- Is port using 16550 UART?
- Does loss of CTS hold Tx?
- Does loss of DSR hold Rx?
- Does loss of CD hold Rx?
- Do modem signal changes set alert flag?
- Do line errors set alert flag?
- Does alert flag stop channel?
- Peek ahead at Rx character
- Write character
- Write string
- Write buffer
- Pause port interrupts
- Resume port interrupts
- Close all ports and exit
- Enable / Disable XON/XOFF
- Enable / Disable RTS/CTS
- Get WideTrack Rx character & status
- Get WideTrack Rx string & status
- Is CTS being used to throttle Tx?
- Is Rx data discarded when DSR is low?
- How many characters used in Rx buffer?
- Has CD changed?
- Has RI, CTS, or DSR changed?
- Is CD asserted now?
- Is RI, CTS, or DSR asserted now?
- Has a line error occurred?
- Has a modem status change occurred?
- Setup codes to check in Rx interrupts (3)
- Setup port for specific dumb multiport

More Level 1 Functions

- Fast driver: Set 16550 FIFO trigger: DOS, Tenberry Software and Phar Lap 286 and 386 DOS Extenders
- Get system time
- Delay n timer ticks
- Calculate 16- or 32-bit CRC
- Get (extended) keyboard code
- Keyboard hit? Get shift states

TextWindows - easy Windows

- Initialize TextWindows system
- Define Window
- TWPrintf() -- just like printf()
- TWKbhit() -- has key been struck?
- TWGetKey() -- get keyboard code
- TWPuts() -- and many more write to screen



Call Greenleaf Software Now:

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- ❑ Supports Microsoft Visual C++ 5 & 6, Borland C++ 5.02, C++Builder 3..6, Symantec C++ and Visual C++ (develop on Win32, target MSDOS)
- ❑ Libraries available (contact us) for Watcom C++ 10
- ❑ For Windows 9x, Me, 2000, XP, and Server 2003. Also target DOS, 16- and 32-bit Extended DOS using Borland C++ 5.02 or Visual C++ 1.52
- ❑ Hundreds of compilable example programs included, all with source for Windows and DOS
- ❑ FREE, well annotated, source code---ANSI C and some assembler
- ❑ BUILD utilities script driven let you compile libraries
- ❑ Supplied libraries include DOS static libraries, Windows static and dynamic libraries for GUI and Console, Release and Debug
- ❑ Coded for optimum granularity and speed. Libraries included for all memory models
- ❑ Product includes Windows Help plus 500 page PDF documentation
- ❑ FREE Web and email based support with telephone support as needed.
- ❑ We accept MasterCard, VISA, American Express. Terms available upon credit approval.
- ❑ Did we forget to say THERE ARE NO ROYALTIES? Well, there are none.

We do the grunt work...