

APPLICATION NOTE

AC500 V2 WEBVISU ACCESS VIA MICROBROWSER

MICROBROWSER FOR WINDOWS



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1 Introduction

1.1 Scope of the document

More and more browser like Firefox, Google Chrome, etc. stop their support of JAVA applets. These JAVA applets are required to display the AC500 V2 web visualization on a browser.

Currently only Internet Explorer is supporting this feature. Microsoft has announced that Internet Explorer will not receive any further security patches. Further information can be found [here](#).

The MicroBrowser which is explained in this document allows you to still use Java applets and your AC500 V2 web visualization. The small application can run on every Windows based computer.

The MicroBrowser directly reflects the variables and pictures created in the CODESYS visualization which are integrated and downloaded to the webserver of the AC500 V2 PLC.

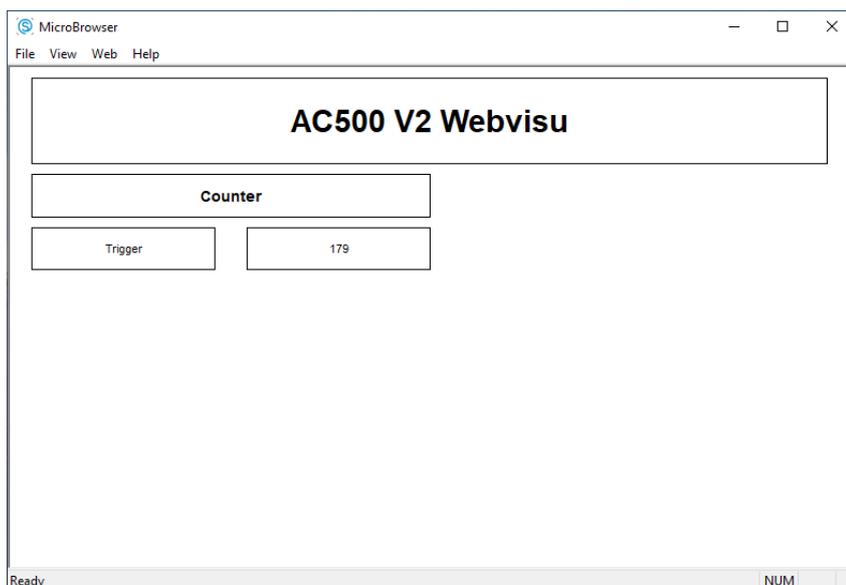
The visualization can access every variable of the PLC program without any synchronization tool. The range of features reaches from normal buttons, meter instruments, trends and histograms, integration of graphic files, alarm handling, dynamic language change, user right management and programmability of objects up to execution of special internal programs like changeover to another PLC, exit the program or change passwords.

1.2 Compatibility

The application example explained in this document has been used with the below engineering system versions. They should also work with other versions, nevertheless some small adaptations may be necessary, for future versions.

- AC500 V2 PLC

1.3 Overview



2 MicroBrowser on Windows

MicroBrowser is a small browser application that runs on Windows-based operating systems. This enables the display of web-based applications that were created with CODESYS and are stored on an AC500 V2 CPU.

2.1 Installation

Installation and licensing are very easy and can be carried out independently by the user.

The app can also be used in demo mode without licensing (the application will automatically close after 15 minutes).

Procedure for installation:

1. Download the application “MicroBrowser_XP.exe” from the iniNet Solutions GmbH website [here](#)
2. Save the application on your Windows PC
3. Start “MicroBrowser_XP.exe”

The first time you start the MicroBrowser, you will be prompt to enter a license key. Press on the “Order Key” button to fill the Web-form with the challenge code and specify your email address to obtain your license key.



Note: If you press Cancel, the program will start but you will not be able to specify any IP address or hostname of the AC500 V2 PLC, you will only be able to open local HTML files.

2.2 Licensing

1. Start the application if not already done in the step before
2. You will see a window with a Challenge code. The key starts with: **CDS-xxxxxxxxxxxx**

MicroBrowser Registration

Challenge code:
CDS-9CCD7 [blurred]

www.ininet.ch/mb1.php Order Key

License key:
[empty]

OK Cancel

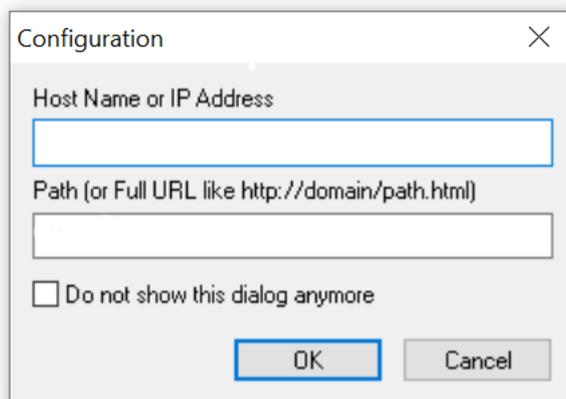
3. Click the “Order Key” button and navigate to the web shop or follow this [link](#)
4. Add the application “**CDS Lizenz: MicroBrowser sämtliche Plattformen**” to your Cart
5. Go to your Cart

6. Fill out the form. Please be sure to add the Challenge code
7. After payment, the license will be received by email
8. Enter the license code you received in the application

	<p>The license code is bound to the PC hardware.</p> <p>This means that if the PC is exchanged, the MicroBrowser application must be licensed again using the procedure described above.</p> <p>The license code is also different when running the application on the same host but in a Virtual Machine.</p>
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	<p>From ABB side, there are no trial licenses available. After starting the application you can run it in test mode for several minutes without a license.</p>
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2.3 Setup



After entering the license, you need to setup the connection. Therefore, fill the fields you are required to.

Standard values for AC500 are:

- IP Address: 192.168.0.10
- Path: webvisu.htm

2.4 XML Configuration

It is essential that the MicroBrowser can write, open and modify this file on the local file system. The XML file is called and is located in the same directory as the "MicroBrowser_CE.exe". The file can be edited with any ASCII text editor.

At the first time the MicroBrowser_CE.exe is started this file will be created.

<version> Version	Version of the configuration file. DO NOT MODIFY IT!
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<start_page> Start Page	<p>Start URL, to open either a local file or remote file:</p> <ul style="list-style-type: none"> • <start_page>Start.html</start_page> relative to the program path. • <start_page>http://192.168.1.10/Start.html</start_page> • Default is “webvisu.htm”.
<log_file> Log File	<p>The MicroBrowser is able to create a log file for debug purposes. This file will increase, until it reaches 1 MB. It is cleared each time you restart the program. See also <debug_level>. Default is “uBrowser.log.txt”.</p>
<proxy_host>, <proxy_port> Proxy	<p>Both tags may contain the respective information. Leave the <proxy_host> empty, since these properties are not yet supported.</p>
<vpi_user>, <vpi_pass> VPI	<p>These properties are only needed, if you plan to access a target system over internet, using VPI-Portal. These properties contain username and password for the portal. Please contact iniNet for details.</p>
<prompt_url> Registration Code	<p>The license key is already available in the CP6xx-WEB Control Panel. There is no need to enter a registration code.</p>
<prompt_url> Prompt URL	<p>If this property is set to 1, the MicroBrowser will open the URL dialog on startup. Set to 0, to force the MicroBrowser to directly start the page defined in <start_page>. In this case, it will not open the dialog anymore (same as choosing “Do not open...”). See also shortcuts Alt-O to restore this option back. Default is 1.</p>
<full_redraw> Full Redraw	<p>Sets the MicroBrowser to perform a full redraw for each update. If this property is set to 0, the MicroBrowser will perform conditional redraws, meaning that only changing objects will be drawn. This option improves the refresh of the MicroBrowser but requires that the HMI is well designed to support this option. Also, you can change this option at runtime, for a specific view, by writing 0 (on gain focus event) and 1 (on lost focus event) onto the container variable “@MB_FULL_REDRAW”. We suggest to leave the default option, i.e. 1.</p>
<debug_level> Debug Level	<p>Increasing the debug level will generate more information in the log file. 0 turns logging off, 1 is the default setting, 2 is the maximum.</p>
<kiosk> Kiosk-Mode	<p>Switches the MicroBrowser to the so-called Kiosk-Mode, where the menu bar will disappear. To hide the task manager bar of WinCE, use the configuration dialog of the operating system: Right button click on the task-bar, choose hide.</p> <p>In this mode, a thin frame of 2 vertical and 5 horizontal pixels will remain. E.g. if you use a VGA resolution, choose a view size of 635 x 470 pixels to avoid scroll-bars.</p> <ul style="list-style-type: none"> • 0: Kiosk-Mode is disabled. • 1: Kiosk-Mode with frame and task bar. • 2: Kiosk-Mode without frame and task bar (full screen & always on top). • 3 same as 2 but hot-keys like Shift-O, Shift-X, Alt-O, Alt-X, are disabled. • 4: The full screen is enabled but the view is not always on top. • 5: This mode allows to start the MicroBrowser (XP only) by adjusting its window size with the size of the applet-tag defined in the html file of the web project. See the project configuration dialog in editor. Not full screen. <p>The Kiosk-Modes 0, 2, 3, 4 and 5 are implemented on MicroBrowser XP too.</p>
<keep_alive> Keep Alive	<p>Sets the options for HTTP 1.1 to keep a socket open. If ever possible, choose 0 to support HTTP 1.0 to avoid trouble.</p>

<httpd_enabled> HTTPD Enabled	If this tag is set to 1, the MicroBrowser will start a web server listening on the port specified by
<httpd_port> HTTPD Port	Port number of the enabled webserver. Should be "80".
<httpd_debug_level> HTTPD Debug Level	Debug level for the webserver. 0 will turn logging off, 2 is the maximum. This option will help you to see the incoming requests from any browser on the webserver. The output file is "eweb.log". Default is 0.
<sip> Soft Input Panel	<p>SIP stands for Soft Input Panel and defines the way to edit any value on the SpiderControl MicroBrowser under Windows CE.</p> <p>Set to 0 to disable the Windows SIP and use instead of the keypad.teq and alphapad.teq in your web project.</p> <p>Set to 1 to enable the Windows SIP and automatically open the Windows SIP dialog (default).</p> <p>Set to 2 to enable the Windows edit-box but without opening the SIP dialog. In the two latest cases, the user may edit the value with a PS2 or USB keyboard. Default is 1.</p> <p>Sets the SIP method:</p> <ul style="list-style-type: none"> • 0: Windows SIP is disabled, use keypad.teq and alphapad.teq. • 1: Windows SIP is enabled, open the SIP on edit-box (*). • 2: Windows edit-box is enabled, but do not open the SIP dialog. • 3: Windows SIP is enabled in edit-box, like for SIP 1. And force the opening and closing of the SIP on every Windows input dialog, like the configuration dialog.
<img_mem_max> Image memory max	Sets the maximum size in bytes used to cache image files in the MicroBrowser. Default is 2 MB: "2097152".
<temp_dir> Temporary Directory	Sets the temporary directory but also the prefix of temporary files. Should be /Temp/~mb~ or ~mb~. The latest will create temporary files with prefix ~mb~ on relative path.
<warn_btn> Warning Button	<p>Warning button: Configure the warning button in the following way:</p> <pre>1;time_in_sec;Label;x,y,width,height;bgndRed,bgndGreen, bgndBlue; fgndRed,fgndGreen,fgndBlue;</pre> <p>Explanation:</p> <p>1: The first option allows to enable=1 or disable=0 the button.</p> <p>time_in_sec: Time in second to display the button. 0 means always on top.</p> <p>Label: Text in button.</p> <p>x, y, width, height: Allows to configure the position and the size of the button.</p> <p>bgndRed,bgndGreen, bgndBlue; fgndRed,fgndGreen,fgndBlue : Allows to define the foreground and background color in decimal RGB code.</p> <p>Default: 1;0;!;1,1,23,23;255,128,64;0,0,0;</p> <p>Example: 1;0;Warning;!;1,1,80,30;255,128,64;0,0,0;</p>
<remote_mode> Remote Mode	<p>Sets the remote mode in this way:</p> <ul style="list-style-type: none"> • 0: Files and RPC are remote (default) • 1: Local files with remote RPC • 2: Local files with local PPO variables, but remote write. <p>Set this option to 1 in order to load HMI files from local file system (on MicroBrowser side) and only send CGI requests on the target. The IP address and the path comes from the start page. For example, in the</p>

	<p>URL: http://192.168.1.2/demo/start.html CGI requests: http://192.168.1.2/cgi-bin/..., and paths for local files are: <code>.\demo\start.html</code>, <code>.\demo*.teq</code>, <code>.\demo*.gif</code>,</p>
<teq_cache> TEQ Cache	<p>If this option is enabled, the MicroBrowser will perform the caching of TEQ files in Ramdisk. We suggest to disable this option (= 0), and use the Windows cache, see <code><mfc_http_en></code> and <code><mfc_http_cache></code>. See also <code><mem_ramdisk_kb></code> if the TEQ cache is enabled. Default is 0 for Windows and 1 for other platforms.</p>
<loading_msg> Loading Message	<p>Configure the loading message displayed on TEQ jump.</p> <p><code>1;Param;Text;x,y,width,height;bR,bG,bB; fR,fG,fB;</code></p> <p>Explanation:</p> <p>1: The first option allow to enable=1 or disable=0 this feature.</p> <p>Param:</p> <ul style="list-style-type: none"> 0: Text is centred using width and height of the TEQ file. 1: Text is centred using following parameters: x,y,width,height. 2: Text is the file name of the image to display on coordinates specified by following param.: x,y,width,height. <p>bR, bG, bB: Background color (unused).</p> <p>fR, fG, fB: RGB color of the text.</p> <p>Default: <code>1;0>Loading...;0,0,0,0;0,0,0,0;0,0,0;</code></p> <p>Example: <code>0;2;sanduhr.gif;4,412,20,20;0,0,0,0;0,0,0;</code></p>
<show_selection> Show Selection	<p>Sets the MicroBrowser to perform the drawing of the selected objects. Default is 0.</p>
<config_page> Configuration Page	<p>Sets the MicroBrowser to open any configuration page before jumping on any URL. The MicroBrowser will ignore the start page if any configuration page is defined and if <code><prompt_url></code> is set to 0. If the specified URL cannot be opened, it will return to the config page, to let the user change the URL, and it will try again after a few seconds.</p> <p>Default is empty.</p> <p>Example: . In this case, the MicroBrowser expects that the configuration project is placed relative to the program path, in the subfolder MB_Config and the file MB_Config.html. See also chapter "<code><config_file> Configuration File</code>".</p>
<config_file> Configuration File	<p>Define the configuration file used to store data from configuration project. The default setting is empty, but the default file name is "MB_Config.ini". See also chapter "<code><config_page> Configuration Page</code>".</p> <p>Example:</p>
<boot_delay_sec> Boot Delay in Seconds	<p>Sometimes, on reboot, the MicroBrowser needs to wait for the system to initialize all resources, like network adapters. This option allows you to set the number of seconds to wait, at startup, before the MicroBrowser tries to load the start page. Default is 0 (disabled).</p>
<set_width> Set Width	<p>Set the width of the view. The default behaviour of the MicroBrowser is that the view is automatically resized to the size of the teq file, showing scrollbar if necessary. This property will force the width of the view and ignore the width of the teq file. Default is 0 (auto).</p> <p>Example: 320 (pixels)</p>
<set_height> Set Height	<p>Set the height of the view. The default behaviour of the MicroBrowser is that the view is automatically</p>

	<p>resized to the size of the teq file, showing scrollbar if necessary. This property will force the height of the view and ignore the height of the teq file.</p> <p>Default is 0 (automatically).</p> <p>Example: 240 (pixels)</p>
<inactivity_to_sec> Inactivity Timeout in Seconds	<p>Set the inactivity timeout in seconds used to substitute the refresh period. See Inactivity Poll Time Substitute.</p> <p>Default is 0 (disabled).</p> <p>Example: 60 (seconds)</p>
<inactivity_pts_ms> Inactivity, Poll Time Substitute in Milliseconds	<p>Set the poll time of substitution in milliseconds, to use as soon as the timeout is reached. This feature is useful to reduce the traffic on the network. First the MicroBrowser starts with the refresh period defined in the SpiderControl Editor project, can be fast. If no activity is detected after a time defined in „inactivity_to_sec“, the MicroBrowser will use the refresh period configured in <inactivity_pts_ms>.</p> <p>As soon as the MicroBrowser detects any user activity again, it will restore the default refresh period from the project.</p> <p>Default is 0 (disabled).</p> <p>Example: 3000 (ms)</p>
<tmz_en> Timezone Enabled	<p>Set if time zone is enabled to display date and time for alarming and for offline trend. We suggest enabling TMZ, if the target supports time zone and generates UTC timestamp (i.e. the target is configured with local date and time, and the time zone is correctly set, or if the target is configured with the time of Greenwich and GMT+0). Thus, the MicroBrowser will display dates and times depending on user local time settings, defined on his computer. For example, with GST (GMT+1), the date and time is displayed with UTC time + 1 hour. In other case, if TMZ is disabled, the timestamp returned by the target will be displayed as is, without any time zone or daylight conversion. This parameter is ignored for online trend, since it always works with local time, and for SAIA alarming and offline trend, where time zone is not supported. The TMZ can be set dynamically, by writing 0 or 1 in the predefined container variable “MB_tmz_en”.</p> <p>Default is 0 (disabled).</p> <p>Example: 1 (enabled)</p>
<mem_ramdisk_kb> Memory RAM-Disk	<p>Set memory size of RAM-Disk in kb. The RAM-Disk is used to create temporary files by the MicroBrowser for FileViewer and DropDown-List painters, to download files from remote web server, to let files in cache, if <teq_cache> is enabled and also by the Web-Server if this latest is running. The ramdisk is cleared, on every URL jump performed by the MicroBrowser. Set the debug level to 2, to see how much memory is really used. Use this parameter with care!</p> <p>Default is 0 (use the default ramdisk size of 1 MB).</p> <p>Example: 1024 (kb)</p>
<mem_heap1_kb> Memory Heap 1	<p>Set memory size of heap 1 in kb. This memory is used to allocate painter objects of the current view and to create the list of PPO. The heap memory is cleared, on every TEQ jump. Set the debug level to 2, to see how much memory is really used.</p> <p>Use this parameter with care!</p> <p>Default is 0 (use the default heap size of 2 MB)</p> <p>Example: 2048 (kb)</p>
<mem_heap2_kb> Memory Heap 2	<p>Set memory size of heap 2 in kb. This memory is used for container variables, html tags from static HTML and CSV files, for trending macro instances, and for log data in online trends,...</p> <p>The heap memory is cleared, on every URL jump performed by the MicroBrowser.</p>

	<p>Set the debug level to 2, to see how much memory is used. Use this parameter with care! Default is 0 (use the default heap size of 2 MB). Example: 2048 (kb)</p>
<p><mem_heap3_kb> Memory Heap 3</p>	<p>Set memory size of heap 3 in kb. This memory is used to store the log data from HD-Log files and from macro offline trends. The heap memory is cleared on URL jump or when the user press any Clear-Logs button on one of these macro objects. Set the debug level to 2, to see how much memory is really used. Use this parameter with care! Default is 0 (use the default heap size of 1 MB). Example: 1024 (kb)</p>
<p><mem_lrheap_kb> Memory LR Heap</p>	<p>Set memory size of LR heap in kb. This memory is used to save HTML tags from dynamic CSV files. The heap memory is cleared on every HTML jump and every time, the user loads a new language file. Set the debug level to 2, to see how much memory is really used. Use this parameter with care! Default is 0 (use the default heap size of 512 kb). Example: 512 (kb)</p>
<p><mfc_http_en> MFC HTTP</p>	<p>Set this option to 1, to use the Windows API to get files from the web server. Enabled, the MicroBrowser will use the Windows cache, depending on the parameter below <mfc_http_cache>. Disabled, the MicroBrowser will use the SpiderLink API to load files. And caching files depending on the parameter <teq_cache>. Default is 1 (enabled). Example: 0 (disabled)</p>
<p><mfc_http_cache> MFC HTTP Cache</p>	<p>This option works if parameter <mfc_http_en> is enabled. It allows to set options of the Windows cache. Default is 1 (re-synchronize) Options:</p> <ul style="list-style-type: none"> • 0: RELOAD: The caching is disabled, always reload the file. • 1: RE-SYN.: Load the file from cache if it is not newer. • 2: OFFLINE: Load the file from cache. • 3: Use settings defined in Windows Internet Options (IE).
<p><http_version> HTTP Version</p>	<p>Set this option to 1, to use HTTP/1.1 on http requests performed by the SpiderLink (CGI or to get files if <mfc_http_en> is disabled). Default is 0 (HTTP/1.0).</p>
<p><shift_hotkeys_en> Shift Hotkeys</p>	<p>Set this option to 1 to enable, or 0 to disable the Shift combinations hotkeys, like Shift-O, Shift-X, ... Therefore, default hotkeys like Alt-X and Alt-O still enabled even if the Shift combinations are disabled. To disable all hotkeys (Shift- and Alt- combinations) use Kiosk-Mode 3. Default is 1 (enabled). Example: 0 (disabled).</p>
<p><perco_file> PERCO File</p>	<p>Set path and file name of the perco file, where persistent container variables are saved (from "MB_PERCO_0" to "MB_PERCO_19"). The default name is "uBrowsCo.xml" and the file is placed on the program folder, but you can now specify an absolute path, like this: Example: <perco_file>\FlashDrv\uBrowsCo.xml</perco_file></p>
<p><storage_path> Storage Path</p>	<p>Set the path where the MicroBrowser will save the trend and alarm log files. If the field is empty, the user will be prompt to specify the folder and the file name with the standard save file dialog. Otherwise, the file will automatically be saved, in the specified folder and based on the TEQ file name, like this:</p>

	<p>where X is an integer value, incremented every time a new file is created, depending on the existing files in the storage folder. Default is empty.</p> <p>Example:</p> <pre><storage_path>\FlashDrv\Log\</storage_path></pre>
<built_in_dialog> Built-In Dialog	Set this option to 1 to enable, or 0 to disable the built-in dialog, to open trend and alarm log files. Default is disabled, the standard Windows Open File dialog is used:
<scale_factor> Scale Factor	At the moment this is only active for CoDeSys HMI's and Kiosk-Mode <kiosk> = 2. This factor sets the scaling of the whole HMI. Default is scaling factor 1, which means original size of the elements. A special case is introduced with scale_factor = 0. In this case, the MicroBrowser will scale the HMI due to the physical screen dimensions, so that the view size given by CoDeSys is stretched or shrunk to meet the physical screen dimensions.
<export_en> Export Enable	When this flag is set to 1, the MicroBrowser will export all the views that are visualized to the local storage system and path given by the parameter <export_path>. This feature can also be used to translate a CoDeSys HMI into a SpiderControl HMI. In that case both, the .xml and .teq files, are being generated and stored on the local storage system.
<export_path> Export Path	This is the path to which the files are exported, when the export setting is enabled <pre><export_en>1</export_en></pre>



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