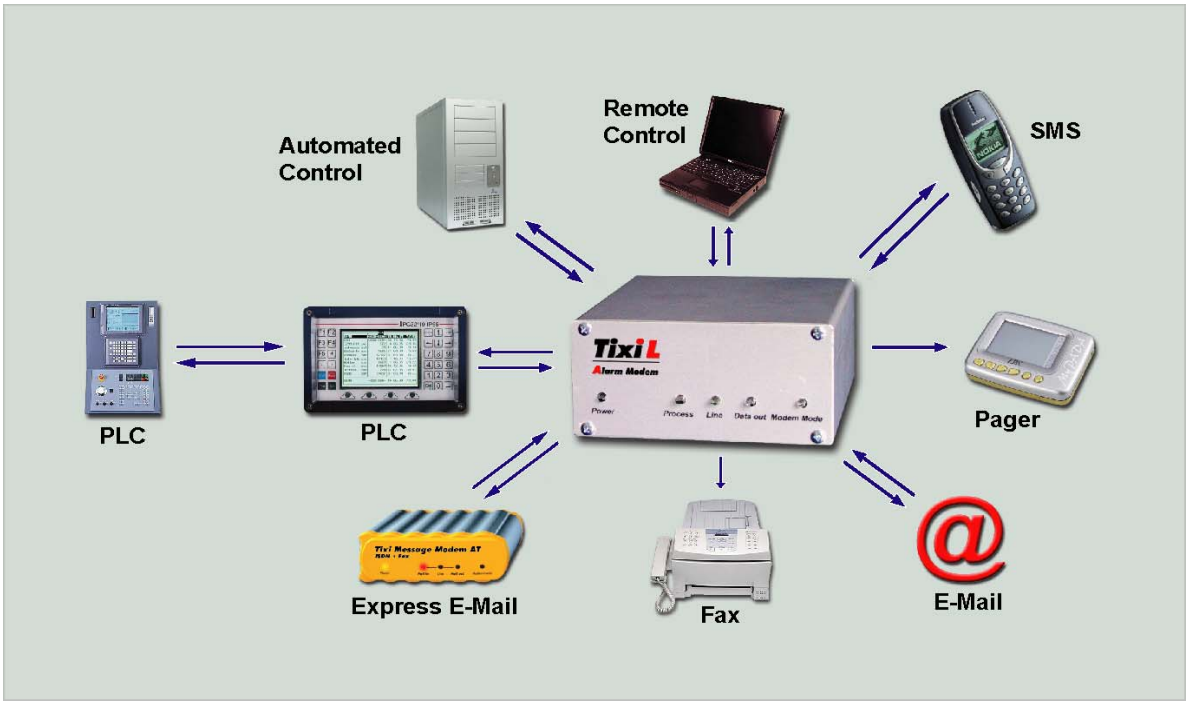
WEB-EN



Webserver TiXML Manual

Tixi Alarm Modem

V 2.02.12

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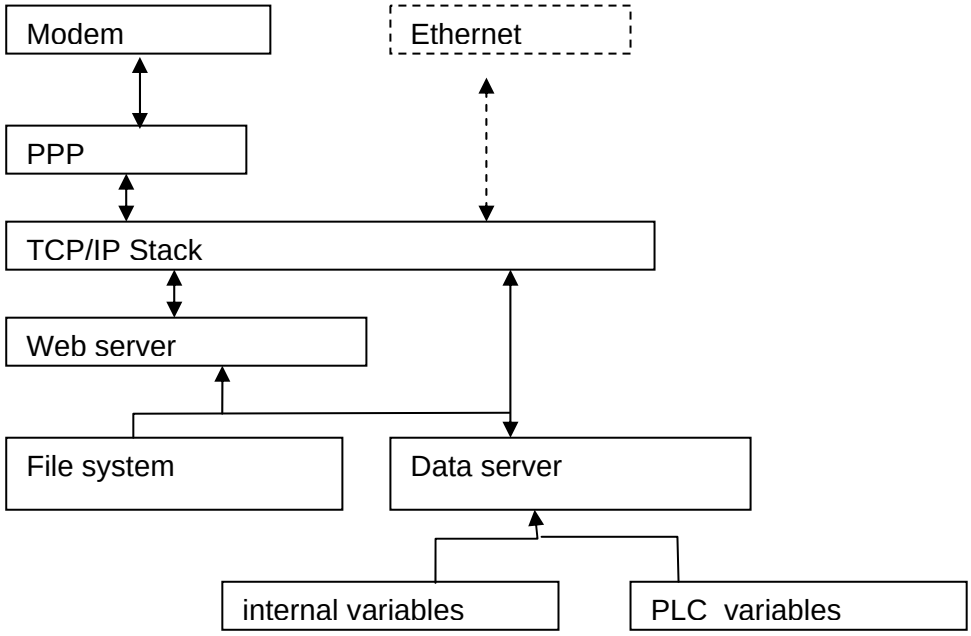
1 Webserver

The Tixi Alarm Modem is available with a built-in web server which, together with a PPP-dialin or ethernet connection, allows the state of the device and the state of an attached PLC to be monitored using a common web browser.

Webserver access:
Default IP-Address: 192.168.0.1.
Default start page: index.html.

The Tixi Alarm Modem can handle a maximum of four simultaneous HTTP or TiXML via TCP/IP connections at a time.

The web server may also be accessed via a dial-out to the ISP (see http://www.devicecontrolweb.com)



The webserver shows HTML-pages which are stored within the file system. The pages may include references to internal variables or variables of an attached PLC which will be resolved via the data server. This is done by special HTML-codes which will display the actual state of a variable if the page will be opened. Direct access to the data server is possible using CGI scripts to make dynamically updated pages.
The webserver supports HTTP file cache.

Tixi.Com can provide some HTML example files and a library of website elements.

Additional informations about data access via HTTP can be found in the “Tixi HTTP Data Interface” manual.

1.1 Display of PLC and Alarm Modem variables

To show the value of variables inside a webpage, a reference to its value must be included in the HTML code. The reference inside HTML is identical to the reference inside TiXML: it starts with a reference code (® or in XML: ®) and the path of the variable (e.g: /Process/MB/IO/I/P0 to show an input of an Hutline modem) .

Part of a webpage to show input ports:

```
<TABLE ID="Table1" BORDER=1 CELLSPACING=3 CELLPADDING=1 WIDTH=200>
  <TR>
    <TD WIDTH=104><P>Port P0:</TD>
    <TD WIDTH=77>&#xae;/Process/MB/IO/I/P0;</TD>
  </TR>
  <TR>
    <TD WIDTH=104><P>Port P1:</TD>
    <TD WIDTH=77>&#174;/Process/MB/IO/I/P1;</TD>
  </TR>
</TABLE>
```

1.2 Special techniques to create dynamic web pages

1.2.1 CGIs

The data server can be accessed directly using CGI scripts and supports requests of logfiles, single and groups of variables

cgi-bin/readLog.exe?	to read logfiles
cgi-bin/readVal.exe?	to read values
cgi-bin/writeVal.exe?	to change values
cgi-bin/RefreshValues.exe?	to refresh value groups

The cgi's may be used inside HTML forms with method „get".

The Syntax of some of these commands is equal to the commands of "Ininet SpiderControl". It's possible to include TEQ files created by "SpiderControl" software into a webpage. These TEQ files contain a viewer which periodically refreshes the values via data server access. For support using the viewer please consult the SpiderControl manual.
Use the above shown references as PPOs.

Examples:
(more examples can be provided by Tixi.Com via email or check our website www.tixi.com)

Example 1:
This code creates a button to display the kast ten entries of the event logfile. The Logfile will be displayed in the same window.
The „Range" is specified after the "+". The range parameters are the same as for the TiXML command ReadLog, but the character "#" has to be replaced by "%23" and "-" by "%2D".

```
<html>
 <body>
   <input type=button
   onclick="location='cgi-bin/readLog.exe?Event+%2310%2D;"
   value="read Event-Log">
 </body>
</html>
```

Example 2:
This code creates a button to set the output QP2 (alias, see next chapter) to “1”. The result will be displayed in the same window:

```
<html>
 <body>
   <input type=button value="set Q/P2"
   onclick="location='cgi-bin/writeVal.exe?QP2+1';" >
</body>
</html>
```

Example 3:
This code creates a form field to enter a value which will be written into variable QP2. The written value will be displayed in a separate window using java script:

```
<html>
<script language="JavaScript">
function window()
{
NewWindow1=window.open("","Result","width=20,height=20,resizable=no,
scrollbars=no,top=50,left=50");
NewWindow1.focus();
}
</script>
<body>
 <FORM action="../cgi-bin/writeVal.exe" method="get"
 target="Result">
    Q/P2 Value:
    <INPUT type="text" name="QP2" value="">
    <INPUT type="submit" value="set" onclick="window()">
 </FORM>
</body>
</html>
```

1.2.2 HTML commands

The Tixi Alarm Modem Webserver and its data server can be controlled by special HTML commands.

HTML commands

Syntax:

`®(commandname=parameters);`

Description:

HTML command to control the Tixi Alarm Modem Webserver

Parameter:

parameters:	Optional, see “commandname”
commandname:	Following command names are available:
Disconnect	Tixi Alarm Modem will disconnect the modem connection.

Format	Shows a variable and reformats its value e.g.: ®(Format=/Process/MB/IO/I/P0+?on'off); The format string behind the "+" ist the same as the „External" or „Record" format (see TiXML-Reference). Please note that the unit is seperated by "'" instead of ";". Boolean formats will be seperated by "'" instead of ",". This format is only supported via direct reference to a variable, not for aliases
Replace	Shows a variable and replaces a part of its content e.g.: ®(Replace=/Process/PV/Text:String_to_replace:new_string); The value of the referenced variable will be parsed for the "String_to_replace" which will be replaced by "new_string".
Include	Includes the "process" tree, or a part of it into the HTML document
ReadLog	Shows the content of a logfile directly as HTML table.

Examples:

Example 1:
If this HTML page is loaded, the Tixi Alarm Modem will disconnect:

```
<HTML>
    <BODY>
      Disconnecting... &#xae;(Disconnect);
    </BODY>
</HTML>
```

Example 2:
The value "12345" of variable Word02 and value "0/1"of variable Bit02 will be reformatted:

```
<HTML>
    <BODY>
      &#xae;(Format=/Process/Bus1/Device_0/Word02+F,2'm);<br>
      &#xae;(Format=/Process/Bus1/Device_0/Bit02+?on'off);
    </BODY>
</HTML>
```

Shown value: 123,45m

Example 3:
The string "Company Name" of variable "Text" will be parsed:

```
<HTML>
    <BODY>
    &xae;(Replace=/Process/PV/Text:Name:Tixi);
    </BODY>
</HTML>
```

Shown string: "Company Tixi"

Example 4:
The Hutline I/Os of the „process“ tree will be shown in the website:

```
<HTML>
    <BODY>
      &#xae;(Include=/Process/MB/IO/);
    </BODY>
</HTML>
```

Example 5:
This example will show the entries of the last 30 minutes of the Datalog logfile as table directly in the website:

```
<html>
 <body>
   <div align=”center”>
      <p><u>Logdata of last 30 minutes:</u></p>
      <table cellpadding=”5” cellspacing=”1” border=”1”
      align=”center”>
         &#xae;(ReadLog=Datalog+last 30 minutes);
      <table>
   </div>
</body>
</html>
```

1.2.3 Using Alias names for variable references

For easier cgi applet and HTML programming the Tixi Alarm Modem offers a database with alias names for I/O and PLC references. Therefor it’s possible to use static names inside the HTML code and to use the alias database to link the static name to the requested variable.

To get the value of an input port without use of alias database the following command is normally necessary:
HTML-reference: `®/Process/MB/IO/I/P0;`
CGI call: `cgi-bin/readVal.exe?/Process/MB/IO/I/P0`
The card address MB is inside this reference. To use this reference with a different hardware, e.g. module address C42, the code has to be changed.

With the alias database it’s possible to link a static name e.g. “`ExtIP0`" to a reference “`/Process/MB/IO/I/P0".` The static name will be used for the reference:
HTML: `®ExtIP0`
CGI call: `cgi-bin/readVal.exe?ExtIP0`
and the system will replace the static name by the reference to get the value. This makes it possible to use the same website with different hardware just by changing the alias database references.

Another advantage of the alias database is the possibility to set access rights for each variable. Therefor it is not possible to read or set variables without corresponding access rights.

Additionally the formatting of variables can be modified. In case that you use a format option in the PLC external definition, but the webserver variable should use another format, it’s possible reformat the variables inside the alias database independent from the external format. The available format options are the same as for logfiles (see TiXML-Reference manual) or PLC variables.

Database path: /ISP/WebServer

```
<WebServer>
   <Aliases>
     <ExtIP0 _="/Process/MB/IO/I/P0" acc="R" />
     <ExtOP0 _="/Process/MB/IO/Q/P0" acc="RW" />
     <ExtOP1 _="/Process/MB/IO/Q/P1" acc="RW" format="?on,off"/>
     <PLCI1 _="/Process/Bus1/D0/I1" acc="R" format="F;"/>
     <PLCO1 _="/Process/Bus1/D0/O1" acc="RW" />
   </Aliases>
…
</WebServer>
```

1.3 Using LogAliases to reformat logfiles

If you open a logfile via Tixi Alarm Modem webserver, it will be shown as XML code.
With the “LogAliases” group it’s possible to reformat the logfile data to save it as a CSV file for example.

The “LogAliases” group is part of the ISP/WebServer group:

Database path: /ISP/Webserver

```
<WebServer>
   <LogAliases>
     <Aliasname _="Logfile" FORMAT saveAs="Filename"/>
   </LogAliases>
…
</WebServer>
```

The FORMAT options are identical to the reformatting attributes of the “IncludeLogTXT” command described in TiXML-Reference manual data logging chapter.
“saveAs” defines the filename which will be offered during logfile download (requires at least Microsoft IE 6.0.2900)

Example:
Database path: /ISP/WebServer

```
<WebServer>
   <LogAliases>
       <DatalogCSV _="Datalog" type="CSV" saveAs="Datalog.csv"/>
   </LogAliases>
…
</WebServer>
```

1.4 Uploading the Website

The complete set of website files has to be compiled into a webSrc.bin BASE64 file.
The webSrc.bin has to be included into a TiXML Frame like this:

```
[<SetBinary _="HTTP" mode="Base64" name="WebSrc.bin">
<D _="NgAAAPYHAADYAycUBAElNYXN0ZXIuamFyACYcAABpbmRleC5odG1sAKcIAABJT19Q"/>
...
<D _="CiAgICAgICAgPUj4NCiAgICA8L1RBQkxFPg0KPC9CT0RZPg0KPC9IVE1MPg0KIA=="/>
</SetBinary>]
```

Tixi.Com provides a tool for converting it into a complete TiXML ASCII file.

1.5 TFTP File Transfer

To transfer files e.g. websites easily to or from the Tixi Alarm Modem a TFTP program may be used. The Tixi Alarm Modem offers this communication protocol via an active TCP/IP connection (ethernet or internet).
Free TFTP programs are available at www.

The ISP database is used to register the binary files and the access to them.

Database path: /ISP/TFTP

TFTP – File Transfer

Syntax:

```
<TFTP>
   <Port _="Number"/>
   <Files>
      <Description _="filename" acc="access" size="size"/>
   </Files>
</TFTP>
```

Description:

File definition for TFTP file transfer.

Parameter:

Number:	TCP/IP port or the TFTP communication. Default: 69
Description:	Description of available files.
filename:	Name of registered file
access:	Access rights for this file: R – read access only W – write access only RW – readand write access
Size:	maximum allowed file size in byte (during upload)

Example:

Three files are configured: The Tixi Alarm Modem Website as binary file, a copy of the TiXML project as zip file and another binary file with pictures for the website:

```
<TFTP>
   <Port _="69"/>
   <Files>
      <Website _="websrc.bin" acc="RW" size="40960"/>
      <Project _="project.zip" acc="R" size="40960"/>
      <webpictures _="pictures.bin" acc="RW" size="10240"/>
   </Files>
</TFTP>
```

1.6 Webserver configuration

The ISP database holds additional web server settings. This is the default configuration:

Database path: /ISP/Webserver

```
<WebServer>
   <ActiveSite _="Site1"/>
   <Site1>
      <Archive1 _="WebSrc.bin"/>
   </Site1>
   <Site2>
      <Archive1 _=""/>
      <Archive2 _=""/>
      <Archive3 _=""/>
   </Site2>
</WebServer>
```

1.6.1 Multiple web pages, splitting websites

It is possible to store several websites inside the Alarm Modem. The active site is chosen with the “ActiveSite" entry. The Alarm Modem supports distributing the website files into 3 archives. With that it’s possible to put often changed files into another archive than never changed files. This will save time during website updates.

Webserver – Sites

Syntax:

```
<WebServer>
   <ActiveSite _="SiteName"/>
   <SiteName1>
      <Archive1 _="FileName"/>
   </SiteName1>
   <SiteName2>
      <Archive1 _="FileName"/>
      <Archive2 _="FileName"/>
      <Archive3 _="FileName"/>
   </SiteName2>
</WebServer>
```

Description:

Sites configuration for webserver.

Parameter:

ActiveSiteName:	Name of the currently active site.
SiteNameX:	Names of available sites.
FileName:	Names of binary files with web content.

Example:

Two sites are configured and Site2 ist active. The website is split into 3 files. One with the HTML code, one with pictures and one with java applets:

```
<WebServer>
   <ActiveSite _="Site2"/>
   <Site1>
      <Archive1 _="WebSrc.bin"/>
   </Site1>
   <Site2>
      <Archive1 _="html.bin"/>
      <Archive2 _="pictures.bin"/>
      <Archive3 _="applets.bin"/>
   </Site2>
</WebServer>
```

1.6.2 Webserver directory restrictions

For each Tixi Alarm Modem webserver “site” separate directory restrictions (Realms) may be defined to limit access to special website areas. The necessary user authentication will be valid for all pages inside the HTML path and is taken from the access rights database (see TiXML-Reference manual).

Restricted directory access

Syntax:

```
<Site1>
   <Archive1 _="WebSrc.bin"/>
   <Restricted>
       <Restriction Path="path" Realm="name" AccLevel="level"/>
   </Restricted>
</Site1>
```

Description:

Sites configuration for webserver.

Parameter:

Restriction:	Name of the restriction.
path:	Relative URL of the restricted directory
name:	Name of the access area.
level:	Access level for this restriction (see TiXML-Reference manual for more details)

Example:

One site is configured. Access to SYSTEM/ path is only granted for users with access level 2. All other directories (*) are open for everyone.

Database path: /ISP/WebServer

```
<WebServer>
   <ActiveSite _="Site1"/>
      <Site1>
         <Archive1 _="WebSrc.bin"/>
         <Restricted>
            <System Path="SYSTEM/*" Realm="TAM_SYSTEM"
               AccLevel="2"/>
            <DeviceData Path="*" Realm="TAM_ALL" AccLevel="1"/>
         </Restricted>
      </Site1>
</WebServer>
```

1.6.3 Webserver idle timeout

After 60 seconds of inactivity, the Tixi Alarm Modem will disconnect automatically. If you want to de- or increase this idle timeout, you have to define a new timeout for out- and incoming connection separately.

For outgoing connections, e.g. CBIS, add this tag to the webserver configuration:

Webserver – Idle timeout

Syntax:

<KeepConnected _=”*periode*”/>

Description:

Time of inactivity on which the Tixi Alarm Modem disconnects (only on outgoing connections, e.g. CBIS).

Parameter:

periode = time (e.g. 60s, 5m, 1h,…)

Example:

Disconnect after 5 minutes:

Database path: /ISP/WebServer

```
<WebServer>
   <KeepConnected _=”300s”/>
   <ActiveSite _="Site1"/>
   <Site1>
      …
   </Site1>
   <Site2>
      …
   </Site2>
</WebServer>
```

For incoming connections, you'll have to add an entry to the timeout database:

```
[<SetConfig _="USER" ver="v">
   <Timeouts>
      <PPPTimeout _="600s"/>
   </Timeouts>
</SetConfig>]
```

1.6.4 Webserver TCP/IP port

The Tixi Alarm Modem Webserver answers HTTP requests on the default HTTP port 80. If the Tixi Alarm Modem is connected behind a firewall, you may need to change the TCP/IP communication port:

Webserver – TCP/IP port

Syntax:

<Port _="*number*"/>

Description:

TCP/IP port to connect to the webserver.

Parameter:

number = port number, e.g. 8080 (Default: 80)

Example:

Connect on port 8080:

Database path: /ISP/WebServer

```
<WebServer>
   <Port _="8080"/>
   <ActiveSite _="Site1"/>
   <Site1>
      …
   </Site1>
   <Site2>
      …
   </Site2>
</WebServer>
```

1.6.5 TiXML TCP/IP port

The Tixi Alarm Modem may also receive TiXML commands via TCP/IP. The TCP/IP port for this communication has to be set and is configured in the ISP database, group TiXML.

Database path: /ISP/TiXML

TiXML – TCP/IP port

Syntax:

<Port _="*number*"/>

Description:

TCP/IP port for TiXML communication.

Parameter:

number = port number, e.g. 8300 (default)

Example:

Connect on port 8300:

```
<TiXML>
   <Port _=”8300”/>
</TiXML>
```

To communicate with the Tixi Alarm Modem via network, you may use TICO – TiXML Console or any terminal program with TCP/IP support, e.g. Windows HyperTerminal or an virtual serial to TCP/IP driver (e.g. Tibbo).

1.7 Webserver connection settings

1.7.1 Dial-in access

To give a PPP client, e.g. Windows Dialup-Networking, access to the alarm modem, a PPP server has to be enabled. It defines the TCP/IP details of the connection.
Access to the web server via ISDN syncPPP protocol is only possible if the callerID of the dialing ISDN device is known by the device. Thereafter it’s not possible to do remote configuration from this telephone number via syncPPP, you’ll have to use X.75 instead. This entry is not necessary for analogue (PSTN) connections. The configuration is made in the ISP database “PPP_Server" group:

Database path: /ISP/PPP_Server

Webserver – PPP access

Syntax:

```
<PPP_Server>
   <OwnIP _="ServerIP"/>
   <OwnSubnet _="SubnetMask"/>
   <RemoteIP _="ClientIP"/>
   <AuthentFlags _="Flag"/>
   <DOPx _="CallerID "/>
</PPP_Server>
```

Description:

Configuration of PPP-Server.

Parameter:

ServerIP:	IP-Address of the PPP-Servers (Modem)
SubnetMask:	Subnetz mask of the used IP network
ClientIP:	IP-Address, assigned to the PPP-Client (PC)
Flag:	Authentication method during PPP dialup 1 = PAP 2 = CHAP 3 = AUTO
x:	entry number (increase)
CallerID:	CallerID of incoming call

Example:

The modem uses the private IP-Adresse 192.168.0.1 (default) and assignes the IP-Address 192.168.0.10 to the dialup device.
The device with number 0301234567 is given ISDN syncPPP access.

```
<PPP_Server>
    <OwnIP _="192.168.0.1"/>
    <OwnSubnet _="255.255.255.0"/>
    <RemoteIP _="192.168.0.10"/>
    <AuthentFlags _="3"/>
    <DOP1 _="0301234567"/>
    <DOP2 _=""/>
    <DOP3 _=""/>
</PPP_Server>
```

1.7.2 Call back initiation service CBIS

Another way to access the Tixi Alarm Modem Webserver is the “call back initiation service” (CBIS). If the CBIS procedure is startet, which is possible via callerID trigger or event handler (see TiXML-Reference manual), the Alarm Modem dials into the internet and sends an email with its own IP address to a predefined recipient.

The CBIS feature requires a configured internet dial-up (see TiXML-Reference manual) and is part of the ISP database.

Database path: /ISP/CBIS

CBIS – Call back initiation service

Syntax:

```
<CBIS>
    <ServerName _="Address"/>
    <PhoneNumber _="CallerID"/>
    <Account _="Recipient"/>
    <ResponseTime _="IdleTime"/>
</CBIS>
```

Description:

Configuration of Call back initiation service.

Parameter:

Address:	Mailserver
CallerID:	CallerID of incoming call
Recipient:	Receiver of CBIS email
IdleTime:	Time to wait for first response (connect)

Example:

Internet access via ISP “Freenet” is configured. CBIS email will be sent via server “193.101.167.194” to recipient “cbis@devicecontrolweb.com”. The CBIS procedure will be initiated via callerID trigger of number “0301234567”:

```
<CBIS>
    <ServerName _="193.101.167.194"/>
    <PhoneNumber _="0301234567"/>
    <Account _="cbis@devicecontrolweb.com "/>
    <ResponseTime _="60s"/>
</CBIS>
```

The CBIS callerID trigger requires a special system event handler with CBIS command:

Database path: /EVENTS/EventHandler/System

```
<System>
    <CBISRequest>
     <CBIS/>
    </CBISRequest>
</System>
```

Its also possible to start the CBIS procedure with every event handler using the CBIS command (see TiXML-Reference manual).

As result of the CBIS procedure the “Account” recipient will get an email from CBIS@Tixi.Com with following content in the Subject line:

```
Subject: CBIS Connect IP-Address   (e.g. CBIS Connect 192.168.0.1)
```

The Body of the message contains the SITE_TAG (see “Tixi HTTP Data Interface” manual).

Thereafter the recipient has to connect to the Tixi Alarm Modem webserver in the time range given by the “ResponseTime” parameter.

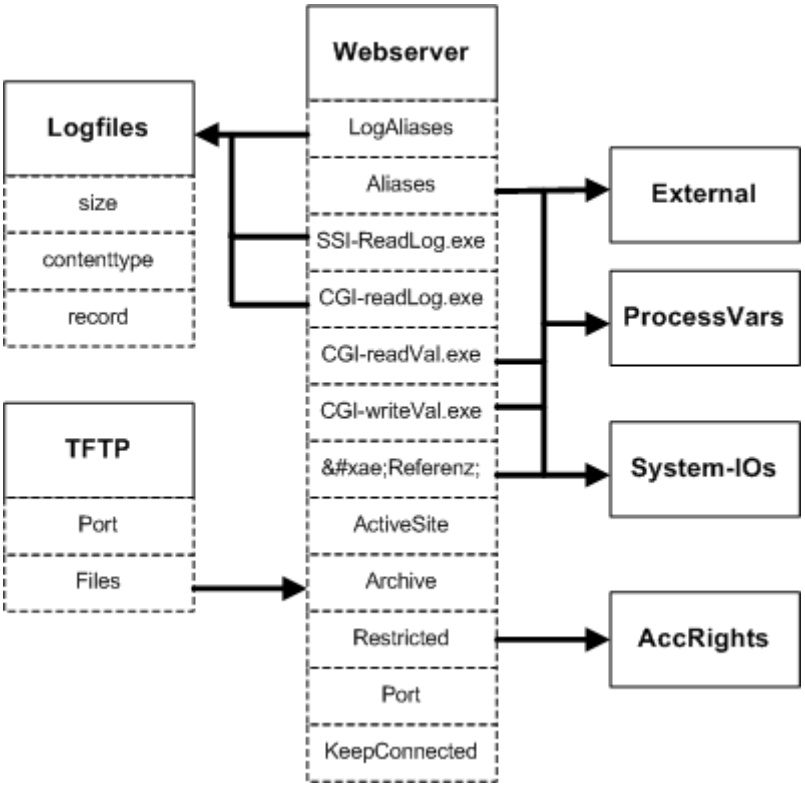
1.7.2.1 Changing CBIS sender address

Some mailservers do not allow to send emails with sender address CBIS@Tixi.Com to prevent spamming.

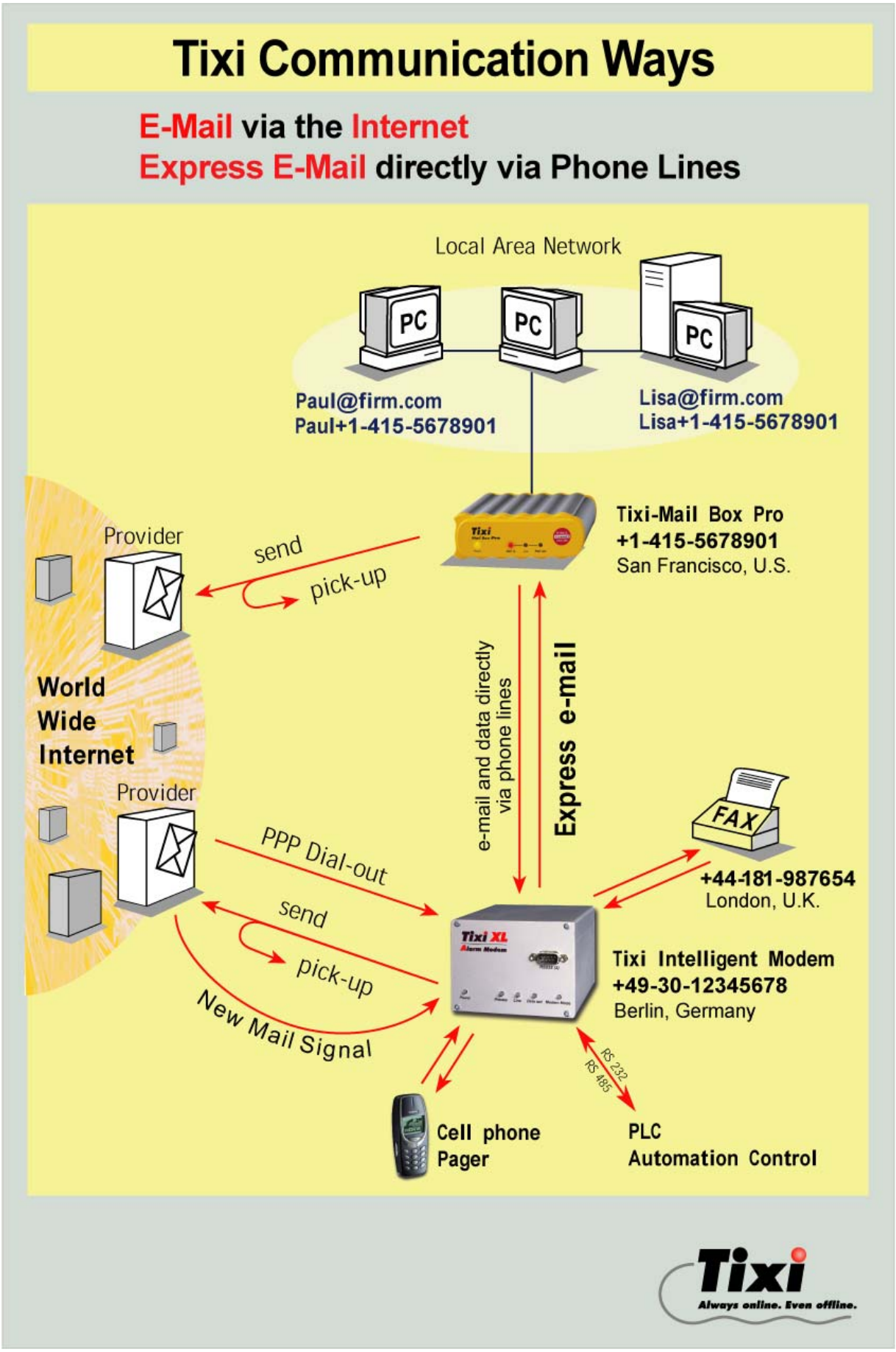
In this case you may create a MessageJobTemplate (see TiXML-Reference manual) where you can select the sender and recipient of the address book:

```
<SendIP _="CBIS">
  <Sender _="/D/AddressBook/MySelf"/>
  <Recipient _="/D/AddressBook/Receiver_0"/>
..
..
</SendIP >
```

2 Appendix: Project structure and connections



Notes


Tixi Communication Ways
E-Mail via the Internet
Express E-Mail directly via Phone Lines
Local Area Network
PC
PC
PC
Paul@firm.com
Paul+1-415-5678901
Lisa@firm.com
Lisa+1-415-5678901
Tixi-Mail Box Pro
+1-415-5678901
San Francisco, U.S.
Provider
send
pick-up
World
Wide
Internet
Provider
e-mail and data directly
via phone lines
Express e-mail
FAX
+44-181-987654
London, U.K.
PPP Dial-out
send
pick-up
New Mail Signal
Tixi XL
Tixi Intelligent Modem
+49-30-12345678
Berlin, Germany
RS 232
RS 485
Cell phone
Pager
PLC
Automation Control
Tixi
Always online. Even offline.