

Appendix for Tx5xx and P85x1 manuals

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Design of www pages for Tx5xx and P85x1 Ethernet transducers

Tx5xx and P85x1 transducers enable to design user's own web pages to display readings from the transducer¹. To successfully make of user's web pages you need this files: web2cob.exe, mimetype.ini, jsgraphics1.js. Contact manufacturer for obtaining this files. To upload web files to probe is the tftp client needed (included in Windows XP).

Pages are created in html code, web server detects command GET. Six 64 kB banks WEB1-6 are available for www pages of the transducer.

Address of www pages is http://IP_transducer/page.html. If your home page is named index.html, enter only IP of the transducer.

Procedure of creation of www pages for Tx5xx and P85x1 transducers

Create HTML pages in any editor. Enter proper tag from tables to place where any of desired transducer reading is required.

Common tags

Tag	Description
<%srn%>	serial number of transducer
<%name%>	name of transducer
<%rfr%>	www pages refresh interval (s)
<%fw%>	firmware version of the transducer
<%ttbl%>	create a table with times of saving values to history table
<%time%>	write time. If the time isn't synchronized with SNTP server, time will be generated using JavaScript and in front of the time will be the text Local PC time written.
<%unt1%>	write the channel physical unit. The number in tag mean the channel number (1-4)

Tx5xx tags

Tag	Description
<%tstr%>	history storage delay (s)
<%type%>	type of transducer (T3511/T4511...)
<%tmp%>	actual measured temperature
<%rh%>	actual measured humidity
<%dp%>	actual computed third value
<%pr%>	actual pressure
<%gtmp%>	graph of temperature history – !!!requires file jsgraphics1.js!!!
<%grh%>	graph of relative humidity history – !!!requires file jsgraphics1.js!!!
<%gdp%>	graph of third computed value – !!!requires file jsgraphics1.js!!!
<%gpr%>	graph of pressure – !!!requires file jsgraphics1.js!!!
<%atmp%>	state of temperature alarm
<%arh%>	state of humidity alarm

¹ In older firmware versions it is necessary to set selection Graphics web enabled in setup of transducer to ON.

<%adp%>	state of third computed value alarm
<%apr%>	state of pressure alarm
<%htmp%>	upper temperature limit
<%ltmp%>	lower temperature limit
<%tmph%>	temperature hysteresis
<%dtmp%>	time delay for temperature alarm activation
<%unt1%>	temperature units (°C, °F)
<%hrh%>	upper limit of relative humidity
<%lrh%>	lower limit of relative humidity
<%rhh%>	hysteresis of relative humidity
<%drh%>	time delay for relative humidity alarm activation
<%unt2%>	relative humidity units
<%hdp%>	upper limit of third computed value
<%ldp%>	lower limit of third computed value
<%dph%>	hysteresis of third computed value
<%ddp%>	time delay for third computed value alarm activation
<%unt3%>	unit of computed value
<%dscr%>	description of computed value (dew point, absolute humidity...)
<%hpr%>	upper limit of pressure
<%lpr%>	lower limit of pressure
<%prh%>	hysteresis of pressure
<%dpr%>	time delay for pressure
<%unt4%>	unit of pressure
<%trh%>	relative humidity history table
<%tdp%>	computed value history table
<%tpr%>	pressure history table
<%tpr%>	pressure table

P85x1 tags

Tag	Description
<%hdly%>	history storage time
<%c1%>	current temperature on channel 1
<%c1n%>	channel 1 name
<%gc1%>	channel 1 temperature graph – !!!requires file jsgraphics1.js!!!
<%ac1%>	channel 1 status
<%hc1%>	upper limit
<%lc1%>	lower limit
<%hsc1%>	hysteresis
<%dc1%>	time delay
<%tc1%>	temperature table

For channel 2-4 are the same tags, change only number of channel. ie: <%lc4%> write lower limit for channel 4.

Example 1:

Code example for Tx5xx

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html>
  <head>
    <meta http-equiv="refresh" content="<%rfr%>">
```

```

<meta http-equiv="content-type" content="text/html;
charset=windows-1250">
<style>
<!--
body{ font-family: verdana, arial, helvetica, sans-serif;
font-size: 76%;
color: #000; background-color: #fff; }
h1{ font-size: 2.0em; font-weight: normal;margin-top:
0.5em; margin-bottom: 0.2em; }
.cervene {color: red}
.modre {color: #0000FF}
//-->
</style>
<script src="jsgraphics1.js"></script>
</head>
<body>
<h1>Current temperature: <%tmp%>
<%unt1%></h1>
(<%time%>)
<h1>Temperature history:</h1>
<%unt1%>
<div style="position:absolute;top:120px;left:30px;">
<%gtmp%>
</div>

<div style="position:absolute;top:280px;">
<h1>Temperature settings:</h1>
<table>
<tr>
<td>Alarm:</td><td><%atmp%></td></tr>
<tr>
<td>upper limit:</td><td class="cervene"><%htmp%>
<%unt1%></td>
</tr>
<tr>
<td>lower limit:</td><td class="modre"><%ltmp%>
<%unt1%></td>
</tr>
<tr>
<td>hysteresis:</td><td><%tmph%>
<%unt1%></td>
</tr>
<tr>
<td>time delay:</td><td><%dtmp%> s</td>
</tr>
<tr>
<td>Storage interval:</td><td><%tstr%> s</td>
</tr>
</table><br>
</div>
</body>
</html>

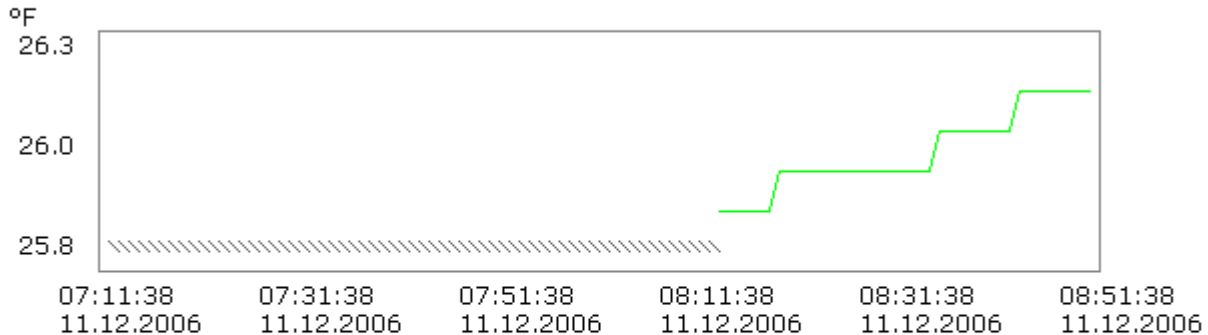
```

Result:

Current temperature: 26.2 °F

(11.12.2006 08:50:51)

Temperature history:



Temperature settings:

Alarm: no
upper limit: 300.0 °F
lower limit: -200.0 °F
hysteresis: 1.0 °F
time delay: 30 s
Storage interval: 60 s

web page from example 1

Compilation and upload of pages

Save pages intended to be uploaded to the transducer to one directory. In case history graph is required to display, it is necessary to add file `jsgraphics1.js` to the directory with `www` pages. For the correct function of sending SOAP messages is the file `soap` required. Run program `web2cob.exe`, which creates `.cob` file. Upload this file to the transducer by means of `tftp` protocol.

Parameters of program `web2cob.exe`:

`Web2CoB [/o <output file>] [/d <directory>]`

Output file: Name of output file. Default name is `cobox.cob`.

Directory: Source directory with `www` pages.

Parameters of tftp transmission: select binary transmission, method PUT. Select target between WEB1 – WEB6.

Note: `mimetype.ini` file should be located in the same directory as `Web2Cob.exe`

Example 2:

Transducer has IP 192.168.1.205. In directory `c:\Tx5xx\www` are located `www` pages. In directory `c:\Tx5xx` are located files `Web2Cob.exe` and `mimetype.ini`. Enter directory `c:\Tx5xx` and specify command:

```
web2cob.exe /d www /o TESTWEB.cob
```

In directory `c:\Tx5xx` `TESTWEB.cob` file is created.

Upload www pages to the transducer to memory space WEB1 by command `tftp -i 192.168.1.205 PUT TESTWEB.COB WEB1`

Limitation

Maximum size of one WEB (cob) page is 64kB. In case size of www page exceeds 64kB, separate it to 6 blocks at maximum, compile separately and upload to memory space WEB1-WEB6

If graphs are used file `jsgraphics1.js` should be entered in pages.

Every tag `<% %>` must be placed in new line in source code.

Capacity of transducer www server is limited. The larger size of www pages, the lower number of simultaneous accesses is enabled.

SOAP

SOAP serves for sending measured data to a HTTP server. With the aid of this protocol data are sent as a XML document (SOAP message). The advantage of this protocol is that sent data aren't binary and for this reason SOAP messages are allowed through firewalls.

Example of SOAP message sent from the Tx5xx transducer

```
<?xml version="1.0" encoding="utf-8"?>
  <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <soap:Body>
      <InsertSample xmlns="http://cometsystem.cz/schemas/soapTx5xx.xsd">
        <passKey>07940140</passKey>
        <SampleDate>Local: 0.092</SampleDate>
        <Temp>23.2</Temp>
        <RelHum>23.6</RelHum>
        <CompQuant>25.0</CompQuant>
        <Pressure>23.4</Pressure>
      </InsertSample>
    </soap:Body>
  </soap:Envelope>
```

element <soap:Envelope>: Specifies that the XML document is a SOAP message. It is defined by the SOAP protocol.

element <soap:Body>: Everything what is nested in this element are SOAP message data. It is defined by the SOAP protocol.

element <InsertSample>: It is needed to have running HTTP server for accepting SOAP messages. For example it can be Microsoft Internet Information Service or Apache HTTP server. There have to be installed a web service for processing data from the message on this server. For example ASP.NET or PHP can be used for creating the web service. This service must include a method of the same name as this element (thus InsertSample). Descendants of the element InsertSample (nested elements PassKey, SampleDate,...) must correspond to parameters of the method.

The attribute xmlns defines a namespace for elements of the SOAP message. For namespace name was chosen the URI referring to the XSD schema which describes this SOAP message. This schema only defines the structure of the XML document which represents the SOAP message. It is in no manner related to the sending and accepting functionality.

Element <passKey>: Contains the transducer serial number (an eight digit whole number)

Element <SampleDate>: Contains the value of time. It is either synchronized with a SNTP server (format: "dd.mm.yyyy hh:mm:ss") or simply a number of seconds elapsed from enabling the transducer (format: "Local: <NumberOfSeconds/1000>").

Element <Temp>: Contains the value of temperature (a number whose decimal part is separated by a dot). In case of transducer failure it can contain this string: "error<error code>". This applies to all elements containing a value (RelHum, CompQuant and Pressure).

Element <RelHum>: Contains the value of relative humidity. If the transducer doesn't support this quantity, the element is not included in the message. This also applies to elements CompQuant and Pressure.

Element <CompQuant>: Contains the value of computed quantity.

Element <Pressure>: Contains the value of atmospheric pressure.

The unit of quantity is that which was selected by the setup program.

Example of SOAP message sent from the P85xx transducer

```
<?xml version="1.0" encoding="utf-8"?>
  <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <soap:Body>
      <InsertSample xmlns="http://cometsystem.cz/schemas/soapP85xx.xsd">
        <passKey>07940140</passKey>
        <SampleDate>Local: 0.092</SampleDate>
        <T1>23.2</T1>
        <T2>23.6</T2>
        <T3>25.0</T3>
        <T4>23.4</T4>
      </InsertSample>
    </soap:Body>
  </soap:Envelope>
```

Elements <T1>, <T2>, <T3>, <T4>: Contains the value of temperature on channel 1 to 4. Transducers P8510 and P8511 have only element T1, because they have only one channel. If there is no probe connected then the element contains this string: “error”.

Rest of the elements have the same meaning as in the SOAP message sent from Tx5xx.

Modification of the structure of the SOAP message

It is possible to write your own XML document which represents the SOAP message. You can create it in whatever text editor. Enter proper tag according to tables below to the place where you want to insert any of data field provided by the transducer. Finally save the file with the name “soap” and add it to the directory with web pages. Its upload to the transducer is part of web pages upload.

SOAP Tx5xx transducer tags

Tag	Description
<%srn%>	Serial number of the transducer
<%time%>	Writes a time. It is either synchronized with a SNTP server (format: “dd.mm.yyyy hh:mm:ss”) or simply a number of seconds elapsed from enabling the transducer (format: “Local: <NumberOfSeconds/1000”)
<%c1%>	Temperature
<%c2%>	Relative humidity
<%c3%>	Computed value
<%c4%>	Atmospheric pressure

SOAP P85xx transducer tags

Tag	Description
<%srn%>	Serial number of the transducer
<%time%>	Writes a time. It is either synchronized with a SNTP server (format: “dd.mm.yyyy hh:mm:ss”) or simply a number of seconds elapsed from enabling the transducer (format: “Local: <NumberOfSeconds/1000”)
<%c1%>	Temperature on channel 1
<%c2%>	Temperature on channel 2
<%c3%>	Temperature on channel 3
<%c4%>	Temperature on channel 4

Setting of device – Setup

The Setup is designed for managing device settings. Setting is performed by means of telnet, or Tsensor program. In this document only settings thru the telnet will be described. Access to the Setup can be protected by a password. If items in the Setup are not confirmed within 5 minutes, the Setup is ended and the device is restarted. Modified values will not be saved. Use the Save and exit selection to store new values.

During setting of a value in the Setup it is not guaranteed the device works with correctly adjusted values. Correct values are set upon leaving the Setup. Through the telnet aren't all of probe settings (display settings, pressure units...) accessible.

Principle of entering a value in the Setup:

Setup items are set by means of the command line. Enter any part of the Setup by pressing keys 0-9 followed by the Enter key. The Setup always prints the current value. If you do not want to change the value, go to the next item by pressing the Enter key. The best way to enter a blank string (e.g. as e-mail address) is to press a space bar, then erase it by the backspace and press Enter.

Common parts of setting

This chapter contain the common settings parts

0. Global settings

Contact your network administrator to get the correct values of the IP , mask, gateway. Entering incorrect values can cause the device be not found in the network or other complications!

IP Address: setting of the IP of the device. Code in brackets shows the current . By pressing the Enter key the original setting will stay unchanged. If a change of the IP is required (recommended), enter a new IP . Use 3 digits for each part of the . Separating character is either an Enter or a dot.

Set Gateway IP : setting of the internet gateway. The value need not be entered if the device will operate only in a local network.

Netmask: setting of the network mask of your network. 0 means the standard preset value.

Change telnet config: change of the access password for telnet. If Y is entered, prompt is displayed.

Enter new Password: enter a new password (maximum of four characters).

Device name: The description of the device (it is possible to change it if needed). This description is displayed on WWW pages and in subjects of sent e-mails. Its maximum length is 32 characters.

MTU size: maximal packet size. Default setting is 1400, range is 1400 – 52. If you have troubles with connection, try reducing MTU size

1. SMTP configuration

Email sending enable: enabling of sending warning e-mails after alarm activation. If N is left, no e-mails will be sent to the specified address.

IP of SMTP server: setting of an IP of the SMTP server. Correct setting is required for the device to be able to send e-mails. Contact your network administrator to get the correct .

Default mailfrom address ?: press Y for default e-mail sender address (sensor@[sensor's IP address]), N for user defined e-mail sender address.

Change mailfrom address (N) ? press Y for enter user-defined e-mail sender address

Enter a new mailfrom address: () enter a new sender e-mail address (19 chars max.)

Sensor e-mail : virtual e-mail of the device from which e-mails will be sent. Do not reply to messages, the device is not able to receive it. This is not user adjustable.

Email of receiver: e-mail address of warning e-mail recipients.

Send test email? In case of confirmation a test e-mail is sent to the specified address.

2. SNMP and SOAP Configuration

SNMP traps enable: enabling/disabling of sending SNMP traps.

SNMP community for read: setting of the password for access to SNMP MIB tables.

SNMP community for write: setting of the password for write to SNMP MIB table of the device.

Trap IP : the IP of recipients of SNMP traps.

Send test trap? Sends a test trap of type 1/0 to the specified IP address.

SOAP enable (N) ? Enable SOAP sending

Target SOAP server IP address: IP address of SOAP server

Target web page: path to web page, where the device send the message

Source port: (10002) device's source port

Destination port: (10002) server SOAP port

Sending interval: (10 s) SOAP sending message delay

7. Factory defaults

This selection sets the Setup items to default values

8. Exit without save

Leaves the setup without saving any modifications. After termination of the procedure the device is reset.

9. Save and exit

Saves modifications to the memory and resets the device.

Settings for Tx5xx probes

3. WWW configuration

WWW enable: enables the display of www pages

Web refresh time: interval for automatic page refresh (update of measured values). Range 10–65535 s. (0 means no refresh.)

4. Modbus configuration

Modbus (port 502) Enable: enables the access to the device via port 502

Set port: Set Modbus communication port

5. History configuration

History refresh time: Setting of the logging interval for history record.

6. Alarm configuration

Setting of alarms (upper limit, lower limit, hysteresis, alarm delay)

Settings for P85x1 probes

3- WWW and history configuration

WWW enable: enables the display of www pages

Web refresh time: interval for automatic page refresh (update of measured values). Range 10–65535 s. (0 means no refresh.)

History refresh time: Setting of the logging interval for history record:

5- Probe settings

Temperature unit: select of temperature unit (°C, °F)

The menu continue with instructions how to assign temperature probes to concrete device channel

6- Alarm configuration

Setting of alarms (upper limit, lower limit, hysteresis, alarm delay, channel name).