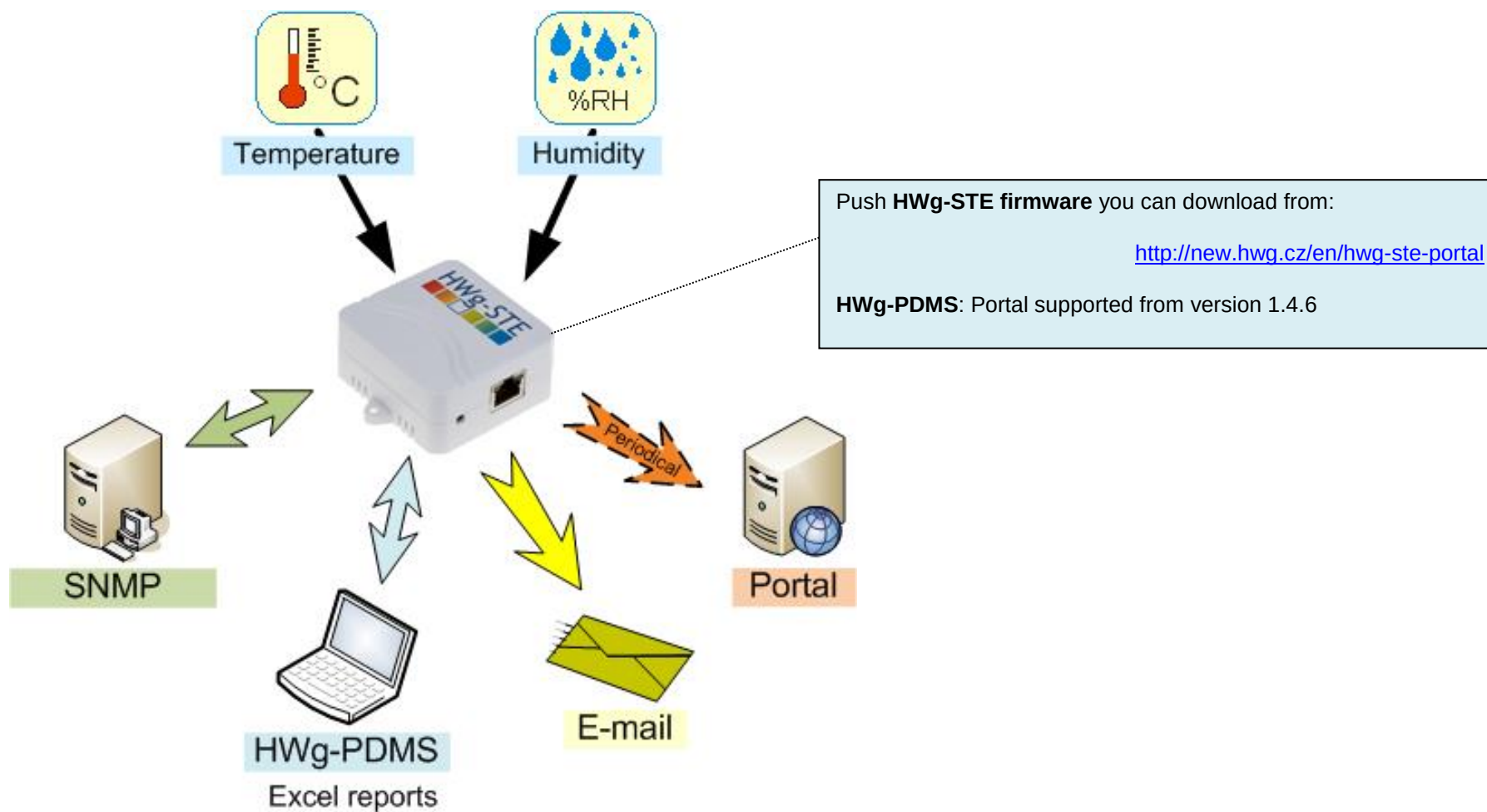
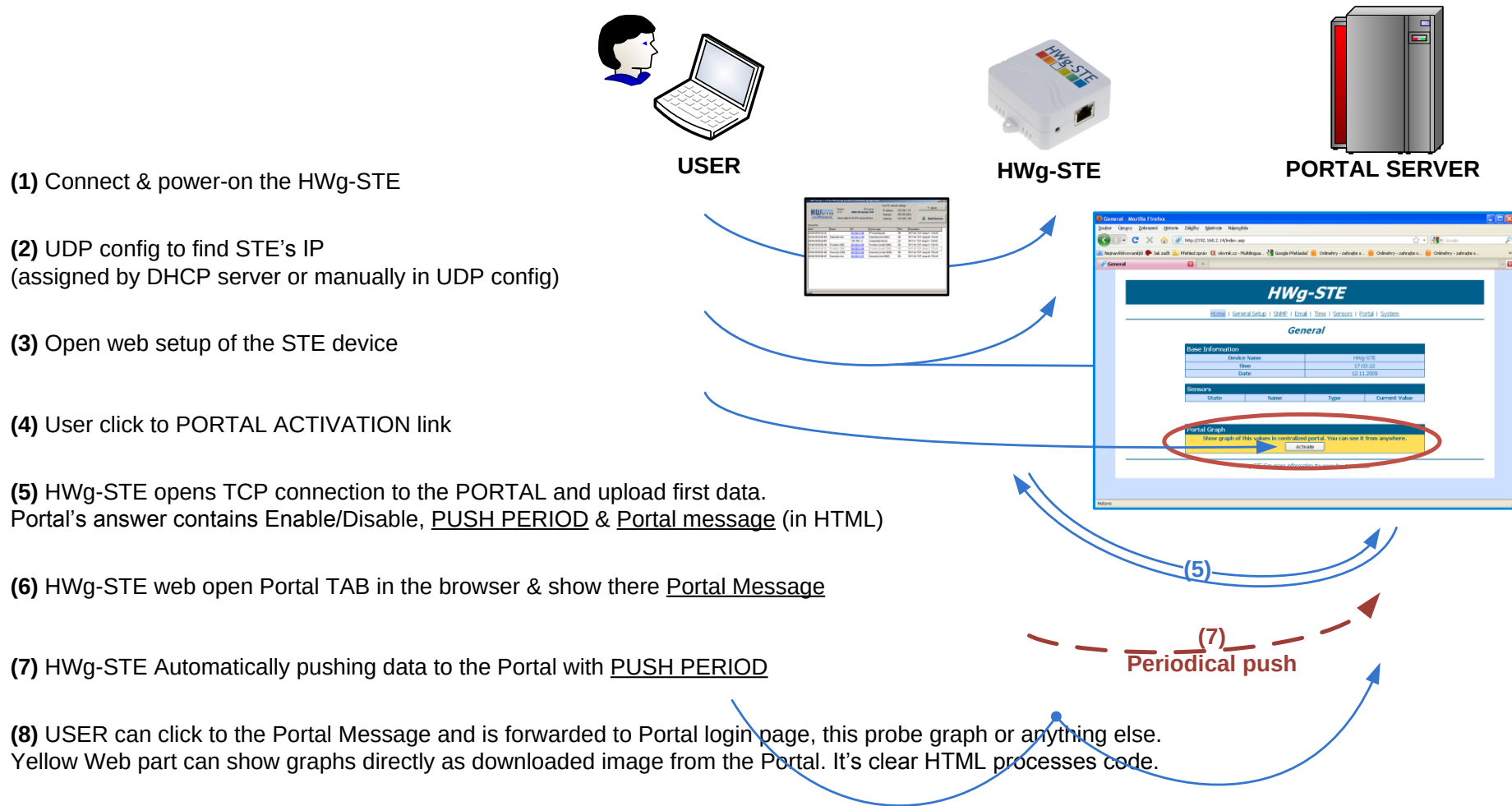


HWg-STE: Portal implementation manual version 4.8.1





HWg-Push protocol

The Portal defines:

- 1) **Periodic push** from STE to Portal. Default 15 minutes.
Uploading data with this defined period. If data not received in time longer than “**Periodic push period**” than device failure.
- 2) **AutoDetect sensor = Delta** per sensor type. Default 3°C for Temperature sensors.
IP Sensor to Portal data push triggered when the current value is different more than delta from last uploaded value.
If the value is not oscillating over Delta value, this function is not activated.
- 3) **Message for user**
Message from the Portal to the user. Message shown on the STE main page.

Security & Payment method

- Sensor will provide the HWg-Push method only for paying customers.
- There will be implemented algorithm to unlock the sensor from the Portal. Will be implemented in next versions.

HWg-Push initial process (first initialization)

- 1) **HWg-STE** Setup DHCP connection.
- 2) **HWg-STE**: Default settings
 - a. Periodic Portal communication=disabled,
 - b. Period 15 minutes
 - c. Portal default link "SensDesk.com"
 - d. „Portal advertisement“ showed
- 3) **User** click to ACTIVATE in „Portal advertisement“ (on STE main page)
 - a. **HWg-STE** Try to push to the portal (open TCP connection as a web browser to portal - server address)
- 4) **Portal answer to STE**
 - a. Answer contains "Push period" (default 15 min), STE set this period (should be min 10 seconds) if the "Push period = 0" than the STE disable function Periodic push.
 - b. Answer contains "Portal message" where is be LINK in HTML tag as target "blank"
- 5) **STE shows** in the Portal advertisement (Main page) the "Portal Message" (with included link to the portal web)
- 6) **User** Click to link to open Portal's web page (opened in new window)
User is redirected to the **Portal new device registration page** (Showing MAC address of device)
 - a. **Are you New user?** (register..)
 - b. **Are you Current User?** (username, password...)
 - c. Or just show **Graph of values** (generated from current logged data)

Notes

- The "**Push Period**" can be defined in each connection. Portal can manage the traffic with this parameter. part.
- Portal defines the "Push period" and the "**Sampling period**". Push Period means time between connections to the Portal.
 Sampling period means local IP sensors data store (local buffer in the IP sensor). Local buffer size is various per IP sensors, typically around 10 samples only. It's not mandatory extension, not all IP sensors will support it.
- **The Events** are generated by IP sensor locally with using the "**delta function**".
 Can be disabled from the portal by Delta=0 definition for all units (Delta is different for Temperature and Humidity for

example).

Delta parameter is called “AP” as Auto Push - “APTemperature”, “APHumidity” or “APIO”.

General - Mozilla Firefox

http://192.168.2.14/index.asp

HWg-STE

Home | General Setup | SNMP | Email | Time | Sensors | Portal | System

General

Base Information	
Device Name	HWg-STE
Time	17:03:22
Date	12.11.2009

Sensors			
State	Name	Type	Current Value

Portal Graph

Show graph of this values in centralized portal. You can see it from anywhere.

Activate

HWg-STE:For more information try www.hw-group.com

HOTOVO

Portal - Mozilla Firefox

http://192.168.2.14/cgi-bin/sys/portal.asp

HWg-STE

Home | General Setup | SNMP | Email | Time | Sensors | Portal | System

Portal

Portal config		
Name	Value	Description
Push Period	20 [s]	Time in Sec, 0 = Disable
Server Address	http://192.168.1.16/portal.php	IP Address or DNS Name
IP Port	80	Default 80

Save Manual Push

Portal Message

Battle of the graphs

Temperature anomaly
Relative to 1950-1980

The IPCC
"hockey stick"

Climatic changes in europe
Over the past thousand years

20th-century
average
temperature

URL to Portal

HWg-STE:For more information try www.hw-group.com

HOTOVO

Portal - Mozilla Firefox

http://192.168.2.14/cgi-bin/sys/portal.asp?Portal=Activate&ZonT=10

HWg-STE

Home | General Setup | SNMP | Email | Time | Sensors | Portal | System

Portal

Portal config		
Name	Value	Description
Push Period	10 [s]	Time in Sec, 0 = Disable
Server Address	http://192.168.1.16/portal.php	IP Address or DNS Name
IP Port	80	Default 80

Save Manual Push

Portal Message

Wait for server response.

HWg-STE:For more information try www.hw-group.com

HOTOVO

XML communication HWg-STE to Portal

IP sensor device -» PORTAL

<?xml version="1.0" encoding="utf-8"?>	
<Root>	
<Agent>	[ro], Device parameters group
<Version>1.1.7</Version>	[ro], Device firmware version
<XmlVer>1.03</XmlVer>	[ro], XML file version
<Model>52</Model>	[ro], 52 – HWg-STE, 55 – HWg-PWRxx, 70 – HWg-STE Plus
<vendor_id>0</vendor_id>	[ro], Vendor ID number – 0 .. 65565 16. bit number in ASCII
<MAC>00:0A:59:03:0C:91</MAC>	[ro], Unique device MAC address (Used one only - EMAI or MAC)
<EMAI>012345678901234</EMAI>	[ro], Unique device EMAI (Used one only - EMAI or MAC)
</Agent>	
<Network>	
<IPAddr>192.168.10.20</IPAddr>	[ro], Network IP address
<Submask>255.255.255.0</Submask>	[ro], Network IP Mask
<Gateway>192.168.1.253</Gateway>	[ro], Network IP Gateway
<HttpPort>80</HttpPort>	[ro], WWW server port
</Network>	
<Time>	
<TimeZone>1</TimeZone>	[ro], Local TimeZone
<SummerTime>1</SummerTime>	[ro], Enable(1) or Disable(0) automatic summer time switch
<Timestamp>151454546</Timestamp>	[rw], Current UTC time in Sec
<UpTime>300</UpTime>	[ro], Device uptime in Sec
</Time>	
<Portal>	
<DeviceName>HWg-STE in kitchen</DeviceName>	[rw], Device name – User configurable, (64 chars), - Editable by Push or by device WEB
<PushSource>0</PushSource>	[ro], 0 = Periodic data push, 1 = Event data push (Autopush), 2 = manual push from WWW (Initialization)
<PushPeriod>10</PushPeriod>	[rw], Interval of automatic pushing data (defined in previous Push connection)
<LogPeriod>0</LogPeriod>	[rw], Period for store values to Local buffer <ValueLog> Data stored in the IP sensor device (16 for HWg-STE Push) (defined in previous Push connection)
<APLimit>30</APLimit>	Minimal period of AutoPush. 0 = autopush disabled
<APSourceID></APSourceID>	[ro], ID value from AutoPush message. 0 = This is not AutoPush
<ServerAddress>http://192.168.10.2/portal.xml</ServerAddress>	[rw], Portal IP address with script name included!
<PortalPort>80</PortalPort>	[rw], Portal Server IP Port
<File>	File from device to Portal when CMD command
<Name>Filename</Name>	
<Data addr=0>80 chars Base64</Data>	
<Data addr=60>80 chars Base64</Data>	
<Data addr=120>80 chars Base64</Data>	
</File>	
<SetupCRC>15485498456</SetupCRC>	[ro], CRC configuratin Device for synchronization with Portal. HWg-Ares only.
</Portal>	

```

<Sensors>
  <Entry>
    <ID>215</ID>
    <Name>Sensor 215</Name>
    <Units>C</Units>
    <Exp>-1</Exp>
    <Value>245</Value>
    <Status>1</Status>
    <ValueLog>
      <Value>245;245;245;245</Value>
      <TimeOffset>-7;-5;-3;0</TimeOffset>
      <Status>1;1;0;1</Status>
    </ValueLog>
  </Entry>
</Sensors>
<Meters>
  <Entry>
    <ID>1</ID>
    <Name>Landis</Name>
    <Address>1</Address>
    <SecAddress>94653673</SecAddress>
    <Values>
      <Entry>
        <ID>1001</ID>
        <Name>Power</Name>
        <Unit>kWh</Unit>
        <Value>84</Value>
        <Exp>-3</Exp>
        <Status>1</Status>
      </Entry>
    </Values>
  </Entry>
</Meters>
<Inputs>
  <Entry>
    <ID>1</ID>
    <Name>Input 1</Name>
    <Value>1</Value>
    <ValueLog>
      <Value>0;0;1;1</Value>
      <TimeOffset>-7;-5;-3;0</TimeOffset>
    </ValueLog>
  </Entry>
</Inputs>
<Outputs>
  <Entry>
    <ID>151</ID>
    <Name>Output 1</Name>

```

Sensors

[ro], Unique sensor ID (unique per IP sensor = per MAC address)
[rw], Name of the sensor (text string, 15 chars) – Sensor name (Editable by Push or by device WEB).
[ro], Units of the Sensor
[ro], Value exponent, Value = <Value> * (10 ^ <Exp>)
[ro] **[Optional]**, Actual Value
[ro] [Optional], Status value
[ro], Local Log of values. Current value is the last one (on the right). Storage period defined in SamplingPeriod
[ro], Time shifts for values [s], Time from <Timestamp>
[ro], Log value Status code

Meters section is only for HWg-PWR devices

[ro], Unique meter ID
[ro], Name of the meter (text string, 31 chars)
[ro], M-Bus primary address
[ro], M-Bus secondary address
[ro], Unique value ID
[ro], Name of the meter (text string, 31 chars)
[ro], Value unit
[ro], Actual Value (RawValue)
[ro], Value exponent, Value = <Value> * (10 ^ <Exp>). For example this entry = 0.084 kWh
[ro], Status value

Digital Inputs

[ro], Unique input ID (unique per IP input = per MAC address)
[rw], Name of the input (text string, 15 chars) – Device Input name (Editable by Push or by device WEB).
[ro], Actual Value
[ro], Local Log of values. Current value is the last one (on the right). Storage period defined in SamplingPeriod
[ro], Time shifts for values [s], Time from <Timestamp>

Digital Outputs

[ro], Unique output ID
[rw], Name of the output (text string, 15 chars) – Output name (Editable by Push or by device WEB)

<Value>1</Value>	[rw], Actual Value
<ValueLog>	
<Value0;0;1;1</Value>	[ro], Local Log of values. Current value is the last one (on the right). Storage period defined in SamplingPeriod
<TimeOffset>-7;-5;-3;0</TimeOffset>	[ro], Time shifts for values [s], Time from <Timestamp>
</ValueLog>	
</Entry>	
< /Outputs>	
</Root>	

PORTAL -> IP sensor device (Answer within one connection)

```

<?xml version="1.0" encoding="utf-8"?>
<Root>
  <Portal>
    <DeviceName>HWg-STE in kitchen</DeviceName>
    <Status>0</Status>

    <PushPeriod>10</PushPeriod>
    <LogPeriod>0</LogPeriod>
    <PortalMessage></PortalMessage>
    <ServerAddress>http://192.168.10.2/portal.xml</ServerAddress>
    <PortalPort>80</PortalPort>
    <APLimit>30</APLimit>
    <Cmd></Cmd>
    <File>
      <Name>Filename</Name>
      <Data addr=0>80 chars Base64</Data>
      <Data addr=60>80 chars Base64</Data>
      <Data addr=120>80 chars Base64</Data>
    </File>
  </Portal>
  <Time>
    <Timestamp>151454546</Timestamp>
  </Time>
  <Sensors>
    <Entry>
      <ID>215</ID>
      <SensID>28e91f9501000079</SensID>
      <Name>Sensor 215</Name>
    </Entry>
  </Sensors>
  <Inputs>
    <Entry>
      <ID>1</ID>
      <Name>Input 1</Name>
    </Entry>
  </Inputs>
</Root>

```

Device name – User configurable, (64 chars), - Editable by Push or by device WEB

- Push Server result status.

0 = All OK, Log buffer data erased (equal to none <Status> tag found)

1 = Server Busy, Log buffer data in IP sensor device not erased (available for next push period)

- Set Periodic Push interval [seconds] – will be used for next Push connection

- Set Period [seconds] for store values to Local buffer <ValueLog> – will be used till next Push connection

- Set Message from Portal to user - show on the IP sensor web page.

- Set Portal IP address with script name included! (Portal can here redirect IP sensor to other server)

- Set Portal Server IP Port

Minimal period of AutoPush. 0 = autopush disabled

Command from Push server: "get setup.xml", "get values.xml". Tag can be empty or may not exist file transferred from the server to the device

- Current UTC time in Sec

[ro], Unique sensor ID (unique per IP sensor = per MAC address – Must be listed first)

[ro], Sensor internal ID (8 bytes in HEX, provided by 1-Wire sensor)

[rw], Write new name.

[ro], Unique input ID (unique per IP input = per MAC address – Must be listed first)

[rw], Name of the input (text string, 15 chars) – Digital Input name

Notes

<ServerAdress></ ServerAdress>	- Portal address
<PushPeriod>3600</PushPeriod>	- Push period interval [s]. Default 15 minutes (900). 0 = Periodic Push protocol & AutoPush disabled
<LogPeriod>0</ LogPeriod >	- Log period to internal memory for all sensors in seconds, 0=disabled For HWg-STE limited by internal log size (<u>20 values</u>). For Default PushPeriod 900s is LogPeriod max 45 (recommended 60) When internal memory log full, AutoPush initiated. Internal log erased after successful connection.
<Portalmessage></Portalmessage>	- a message for the user (STRING [256 chars]) can contains HTML link (Supports __IDx__ if you need)

Value Status code

State	Value unknow	0
	Value OK	1
	Sensor invalid	2
	Device invalid	3
	Out Of Range Low	4
	Out Of Range Hi	5

File transmission

It is possible to transmit the data files in both directions with PUSH protocol. In both cases, the file is inserted to XML tag <File>.

The transmitted data are divided to blocks of max 60bytes, then coded in Base64 and inserted in <Data> xml tag. A part of <Data> tag is “addr” attribute, which shows an actual block position in the source file, but this is not an obligatory attribute. Single blocks have to be transmitted in a strict order. The name of the file is saved in a <Name> tag.

```
<File>
  <Name>Filename</Name>
  <Data addr=0>80 chars Base64</Data>
  <Data addr=60>80 chars Base64</Data>
  <Data addr=120>80 chars Base64</Data>
</File>
```

File transmission from a device to portal

Server always decides about the file transmission. A command for sending the file is carried in xml tag <Cmd>, for example <Cmd>get setup.xml</Cmd>. Then the device sends another PUSH, which contains the required file.

Example:

- 1) The device sends a PUSH message
- 2) Server replies with a pre-set message <Cmd>get setup.xml</Cmd>
- 3) Based on receiving a Cmd command, the device sends another PUSH message with a file inserted to the tag <Portal><File>...</File></Portal>
- 4) Server sends a standard reply.

File transmission from server to a device

In this case the server inserts the data to a reply after receiving a PUSH from the device.

Example:

- 1) The device sends a PUSH message
- 2) Server sends a reply with inserted tag file <Portal><File>...</File></ Portal >

Simple PHP example for the Portal code

*This code you can use on the portal side to communicate with the HWg-STE-Portal firmware.
Not compatible now for version 4.1 Will be updated soon*

```
<?

// $my_xml = $GLOBALS["HTTP_RAW_POST_DATA"];
$my_xml = file_get_contents( 'php://input' );

SendDebug($my_xml);

//-----
// UDP Debug function
//-----
function SendDebug($buf)
{
    //      $host = "127.0.0.1";
    $host = "192.168.10.2";
    $port = 1020;

    // Need enabled extension=php_sockets.dll in php.ini
    $socket = socket_create(AF_INET, SOCK_DGRAM, SOL_UDP);
    socket_sendto($socket, $buf, strlen($buf), 0, $host, $port);
    socket_close($socket);
}

//-----
function startElement($parser, $name, $attrs)
{
}

function endElement($parser, $name)
{
}

// initialize parser
$xml_parser = xml_parser_create();
// set callback functions
xml_set_element_handler($xml_parser, "startElement", "endElement");

xml_parse($xml_parser, $my_xml);
// clean up
xml_parser_free($xml_parser);
```

```
function XML_Esc($text)
{
    $search = array('&', '\\', '"', '>', '<');
    $replace = array("&amp;", "&apos;", "&quot;", "&gt;", "&lt;");

    return str_replace($search, $replace, $text);
}

$link = XML_Esc("<a target='_blank' href='\"http://www.captmxxxx.com/portal.php?id=__ID3__\">www.seznam.cz</a>");

echo "<?xml version='1.0'?>";
echo "<Root>";
echo "<Portal>";
echo " <Status>0</Status>";
//echo " <PortalMessage>.XML_Esc("<a href='\"http://someserver.com/sensdesk/invitation/4?control=861785000295034\">Register</a>")."</PortalMessage>";
echo " <PortalMessage>Ahoj ja jsem tvuj portal</PortalMessage>";
//echo " <DeviceName>Kotelna</DeviceName>";
echo " <PushPeriod>900</PushPeriod>";
echo " <LogPeriod>60</LogPeriod>";
//echo " <Cmd>get setup.xml</Cmd>";
//echo " <File>";
//echo " <Name>setup.xml</Name>";
//echo " <Data>PD94bWwgdmVyc2lvbj0iMS4wLj8+Cjxyb290PjxzZXR1cD48ZGV2aWNIX25hbWU+YWxhbGExMTI8L2RI</Data>";
//echo " <Data>dmljZV9uYW1lPjxzbnRwPjx0aW1lX3NlcnZlcl4xMC4wLjAuMTwvdGltZV9zZXJ2ZXI+PC9zbnRwPjxz</Data>";
//echo " <Data>eXN0ZW0+PHVwZ3JhZGVfc2VydmlvPyPmh0dHA6Ly9uZXcuaHdnLmN6L2Rvd25sb2FkL2Z3L3ZlcnNpb24v</Data>";
//echo " <Data>aHdnLWFyZXMxMi5qc2wvdXBncmFkZV9zZXJ2ZXI+PC9zeXN0ZW0+PHNlbnNvciBpZD0iNjU1MzUiPjxu</Data>";
//echo " <Data>YW1lPmJhdGVyc2thPC9uYW1lPjwvc2Vuc29yPjwvc2V0dXA+PC9yb290Pgo=</Data>";
//echo " </File>";
//echo " <PortalPort>80</PortalPort>";
//echo " <PortalMessage>Test: ".$link."</PortalMessage>";
//echo " <ServerAdress>.XML_Esc("<http://192.168.10.2/portal.php>")."</ServerAdress>";
//echo " <APTemperature>4</APTemperature>";
//echo " <APHumidity>5</APHumidity>";
echo "</Portal>";
//echo "<Time>";
//echo " <Timestamp>.time()."</Timestamp>";
//echo "</Time>";
echo "<Sensors>";
echo " <Entry>";
echo " <ID>6291</ID>";
echo " <Name>Kotel vstup</Name>";
echo " </Entry>";
echo " <Entry>";
echo " <ID>6292</ID>";
echo " <Name>Strojovna vystup</Name>";
echo " </Entry>";
echo "</Sensors>";
echo "</Root>";
```

ScreenShots

Device: HWg-STE-
page

Portal, Portal config

HWg-STE-Portal: Ethernet thermometer

[Home](#) | [Graph](#) | [General Setup](#) | [SNMP](#) | [Email](#) | [Time](#) | [Sensors](#) | [Portal](#) | [System](#)

Portal

Portal config		
Name	Value	Description
Portal	☒	Portal Enable/Disable
Push Period	10 [s]	Time in Sec, 0 = Disable
Sampling Period	0 [s]	Time in Sec, 0 = Disable
Server Address	http://192.168.10.2/portal.xml	IP Address or DNS Name
IP Port	8080	Default 80
Username	aaa	Portal username and password [0 to 16 characters]
Password	...	

Autodetection of sensors activity		
Delta Temperature	2.0	Push data automatically if current value differ from last reported value for more than delta.
Delta Humidity	2.0	
Save		Manual Push

Portal Message
Wait for server response.

HWg-STE-Portal:For more information try www.hw-group.com

Device: HWg-PWR3, Portal config page

HWg-PWR3: M-Bus Meter

- HWg-PWR
 - Home
 - Graph
 - Graph Config
 - General Setup
 - SNMP
 - ModBusTCP
 - Email
 - Periodic Email
 - Time
 - Input
 - Portal
 - Device
 - 1. Meter Landis
 - 1001.Value Digital Output
 - 1002.Value Digital Input
 - 1003.Value Error flags
 - 1004.Value Software ver
 - 1005.Value Fabr No
 - System

Version 1.0.2d

Portal

Portal config		
Name	Value	Description
Portal	☒	Portal Enable/Disable
Push Period	10 [s]	Time in Sec, 0 = Disable
Server Address	192.168.10.2/portal.php	IP Address or DNS Name
IP Port	80	Default 80
Username		Portal username and password [0 to 16 characters]
Password		
Save Manual Push		

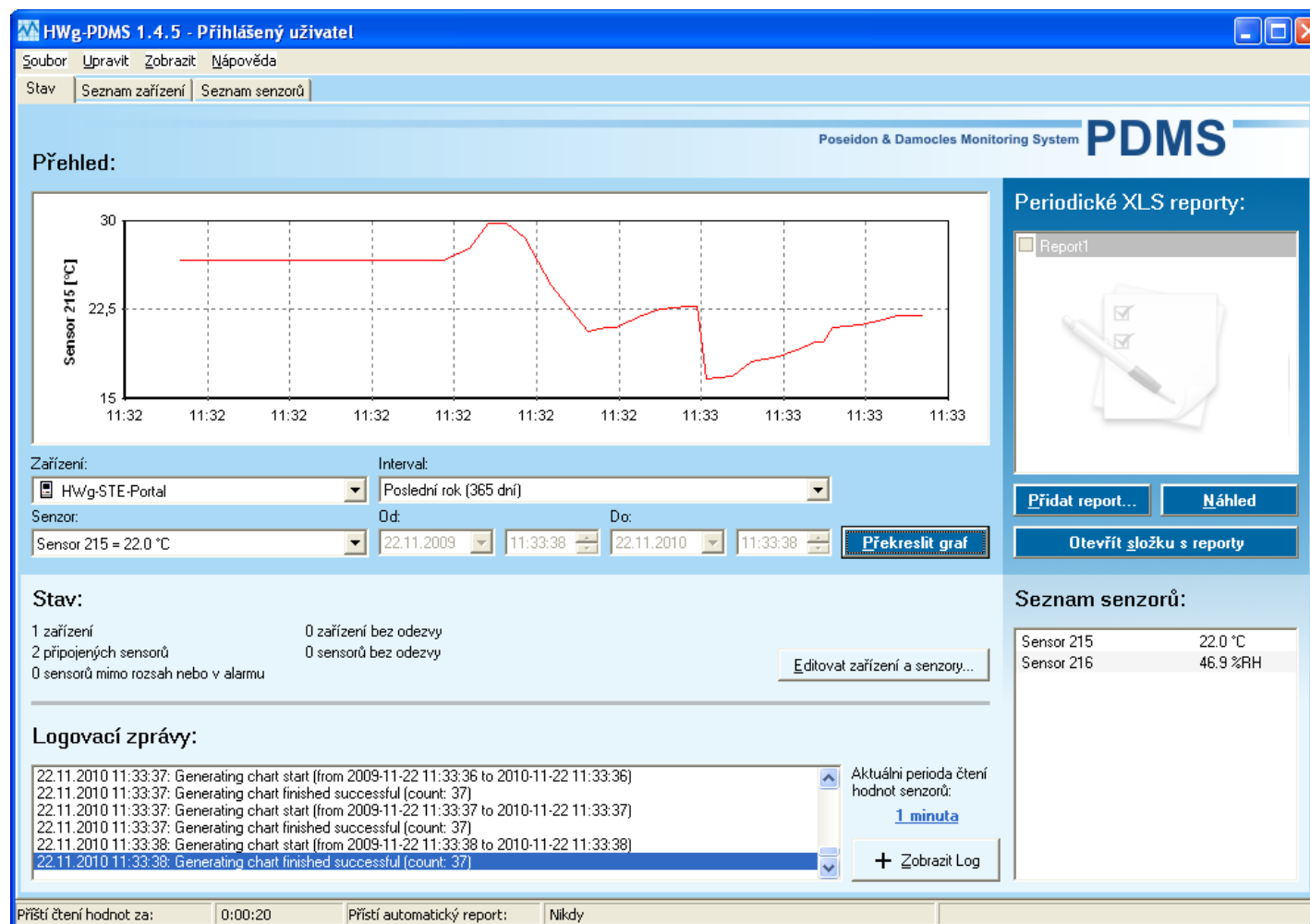
Portal Message

Wait for server response.

HWg-PWR:For more information try www.hw-group.com

PDMS: HWg client software

PDMS Main page



Globální nastavení

Obecné | E-mail | Portal

☒ Portal Enabled

Service:
portal.xml

Port:
8080

Uživatelské jméno:
aaa

Heslo:
xxxx

Editovat zařízení a senzory

Poseidon & Damocles Monitoring System **PDMS**

Vyhledat zařízení

- HTTP XML
 - HWg-STE-Portal - 192.168.10.21:80
- E-MAIL (<POP3 Server>) - Zakázáno
- PORTAL
 - ☒ HWg-STE-Portal - 192.168.10.21:80
 - ☒ Sensor 215 (215)
 - ☒ Sensor 216 (216)

Vzdálené zařízení:
ste.hwg.cz

HWg-PDMS 1.4.5 - Přihlášený uživatel

Soubor | Upravit | Zobrazit | Nápověda

Stav | Seznam zařízení | Seznam senzorů

Poseidon & Damocles Monitoring System **PDMS**

Jméno zařízení	Stav	Adresa zařízení	MAC adresa	Čas posledního úspěšného čtení hodnot
HWg-STE-Portal	Portal Request	192.168.10.21:80	00:0A:59:20:11:22	11:15:17, 22.11.2010

Přístí čtení hodnot za: 0:00:34 Přístí automatický report: Nikdy

Revision History

Revision	Date	Description
4.5	6.2.2012	1) Add revision table 2) Add HWg-PWR Push protocol description. Node Meters in XML. 3) Graphics changes
4.6	15.2.2012	Change <Unit> node to <Units> in HWg-PWR tree.
4.7	24.3.2013	1) Remove autopush values 2) Add Status value tag, add status table code 3) PortalMessage write only
4.8	29.5.2013	1) Add <Cmd> 2) Add <File> 3) Remove __IDx__ 4) Add <APLimit> 5) Add <APSourceID>
4.8.1	31.1.2014	1) Translation Fix