Application Note: Working with SiteManager SMS and Email Alerts

This document provides an overview of the different Alert mechanisms support by a Secomea SiteManager hardware unit.

Version: 2.2, 2023

Applicable to GateManager and SiteManager version 5.8 or newer

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Change log

Version	Change log
2.0	Initial version
2.1	Updates to the following chapters 1.4,

1. Introduction

The SiteManager appliances support a variety of Alert mechanisms. Alerts can be triggered by an Input port, Serial port (AT commands) or Ethernet (URL or UDP/TCP commands).

The resulting Alerts can be sent either directly from the SiteManager via SMS (for models with integrated modem) or Email, or the Alerts can be sent via the GateManager either as SMS (if the GateManager has SMS enabled) or as Email.

1.1. Alert trigger methods:

Devices installed locally to the SiteManager, can use it to send Alert messages by the following trigger methods.

- **TCP/UDP** – with an Ethernet connection to the SiteManager an SMS or Email can be send by establishing a TCP session from the PLC to a port (default) 26864) on the Uplink or DEV interface and send a message such as: */+4511223344/Tank level low*.

- **Digital Input ports** – on the SiteManager WEB interface you can configure the GateManager > Alert menu to send a static text to a mobile number or email or list of recipients when the Input1 or Input2 ports goes ON or OFF.

- **Serial Port** – by using AT-Commands you can, with a Serial connection from your PLC, trigger the SiteManager to send a SMS or an Email such as: *AT+CMGS=+4511223344 CR Tank level low ctrl+z*

- **HTTP browser** – for testing and troubleshooting you can use a web browser to send an SMS or Email message, by typing e.g. the following in the address bar from a PC placed on the Uplink or DEV side of the SiteManag-er:*http://172.16.16.187:26864/SMS/+4511223344/testing_SMS*

- **HTTP Request** - You can issue a GET or POST HTTP request to the SiteManager to send an SMS.

1.2. Alert message gateway options:

Alerts triggered by the above mentioned methods, can be submitted by different methods:

- **Using GateManager as Gateway** – The SiteManager can be configured to use the GateManager as gateway for messages triggered by the above mentioned methods. Note that SMS services must be enabled on the GateManager to allowing sending of SMS.

- **Using SiteManager as Gateway** - The SiteManager can be configured to send Email and SMS messages triggered by the above mentioned methods from the local Uplink interfaces. Note that it requires an SMTP settings to be entered in the SiteManager, and that local SMS messages are only supported by SiteManager models with integrated modem (xx39 models)

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- **SMTP Relay** – A PLC supporting integrated SMTP Client uses the SiteManager's DEV port as email gateway, and the SiteManager will relay the Email via the GateManager's mail service. Such messages are not logged in the GateManager audit log.

- **SMTP Routing** – A PLC supporting integrated SMTP Client uses the SiteManager's DEV port for routing the email to a SMTP server on the Uplink side of the SiteManager. Such messages are not logged in the GateManager audit log.

1.3. Receiving SMS messages, sent to the SiteManager:

Devices installed locally to the SiteManager, can read SMS messages that have been sent to the SiteManager's integrated Uplink2 2G/3G modem (xx39 models only), by the following methods:

- **TCP** – with an Ethernet connection to the SiteManager a PLC can read the SMS messages queued on the SiteManager, by creating a TCP connection to the SiteManager's Alert port (default 26864) and send the text: *LIST/ALL*

- **Serial port** – by using an AT-Command you can read the SMS messages queued on the SiteManager by the following line command: *AT+CMGL=ALL*

- **HTTP** – for testing and troubleshooting you can use a web browser to read the queued SMS messages, by typing the following in the address bar: *http://172.16.16.187:26864/SMS/LIST/ALL*

- **HTTP Request** - You can issue a GET or POST HTTP request to the SiteManager to send an SMS.

1.4. Nice to know about Alert messages

- SMS messages will be sent also when the SiteManager is in SMS-Wakeup mode (not connected to GateManager).

- Sending Email or SMS messages locally does not require the SiteManager to be connected to a GateManager.

- SMS or Email messages will be sent also when the 3G/UMTS connection is in use by another external connection, such as a LinkManager.

- The last 10 messages are stored on the system while old messages are automatically deleted.

- All messages are cleared after a reboot/repower.

- To use Serial AT-Commands you must set the serial port to SMS Modem (SiteManager menu: **System > Serial > SMS Modem**). Also if using the AT-Commands for sending email messages.

- When the Serial port is used as SMS Modem it cannot be allocated a Serial agent also.

- All AT-Commands must be in capital letters.

- The maximum size of a SMS message is 160 characters

- A recipient can be a mobile number or an email address. More numbers must be separated by comma ',' colon ':' or space. Email addresses should be entered in < > like <xyz@company.com>. See the online help for more information.

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2. Sending Email Alerts transparently via SiteManager

If a device is capable of sending email directly via a built-in mail client, you can configure the SiteManager to forward or route the mails to a SMTP server directly or via the GateManager connection.

Note that Alert emails that are sent transparently through the SiteManager are not registered in the GateManager Audit log.

2.1. Using SiteManager as SMTP gateway for sending Email messages via GateManager.

NOTE: This illustration shows a SiteManager connected via Uplink1 (Ethernet). The connection to the GateManager can, however, be either Uplink1 or Uplink2 (2G/3G).
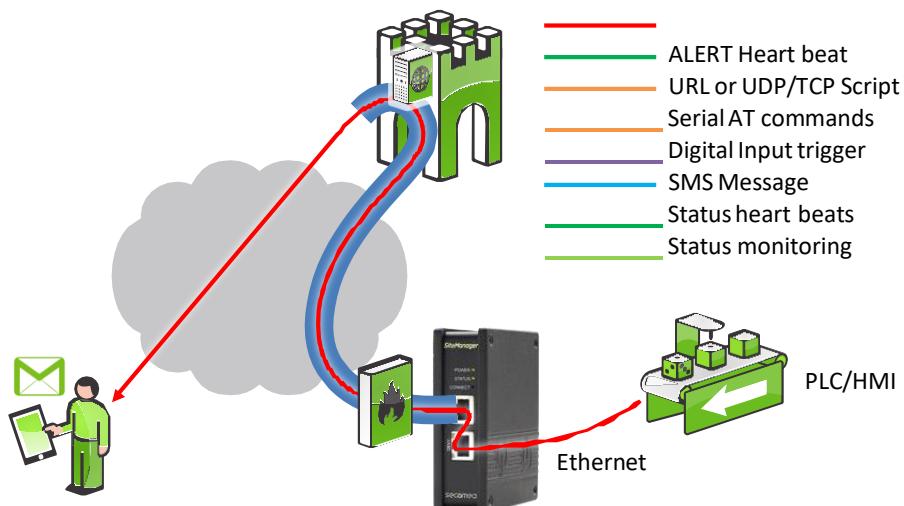
The SiteManager does NOT function as a SMTP server. It only relays the email back to the GateManager, and relies on the GateManager to relay it further to a SMTP server.

The SiteManger does NOT send traffic directly through the corporate firewall and the customer's firewall is not as risk of becoming source for mail traffic generated by the device. The source for the email will be the GateManager and it is therefore also vital that it is not abused (refer to Secomea's terms of use).

The SiteManager will NOT check the source addresses of devices that attempt to use it for relaying, but will allow relaying for any device on the DEV side. So make sure that the relay function is used in a controlled environment.

2.1.1. Setup the mail client on your Device or PC

The device or PC that should send emails via the SiteManager must be located on the DEV side of the SiteManager.

Just specify the SiteManager's DEV1 IP address as SMTP server in your email client.

NOTE: the mail relay feature does not support encryption or connection to SMTP servers that require login credentials.

### 2.1.2. Setup SiteManager on a Secomea hosted server

In order to use the SiteManager as Mail Relay server in conjunction with Seco-mea's hosted GateManager servers you must enter the SiteManager menu **GateManager → Server Relay** and create the following Server Relay:
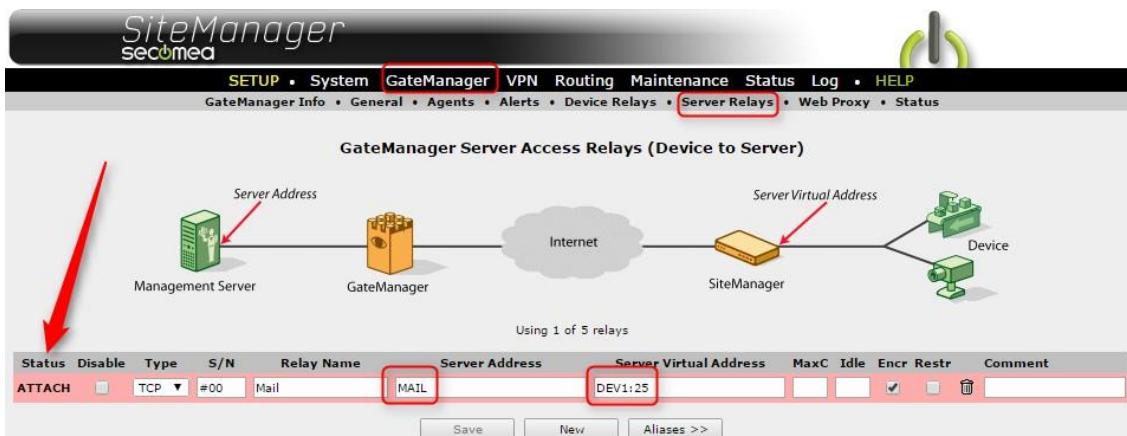
The server address (**MAIL**), corresponds to a symbolic name on the GateManager server that directs the mails to a SMTP server.

The Server Virtual address should just specify the SMTP port **DEV1:25** (assuming DEV1 on the SiteManager is used). No other port than 25 can be specified.

Note that the GateManager is likely configured to not "Auto-Attach" the Relay definition. To manually attach, locate the Server Relay for the SiteManager and select Attach here.
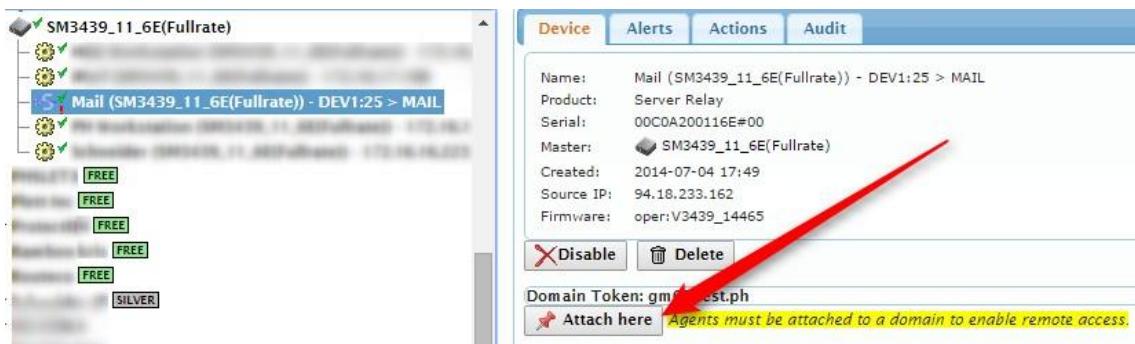
You should now see the Server Relay definition turn IDLE:
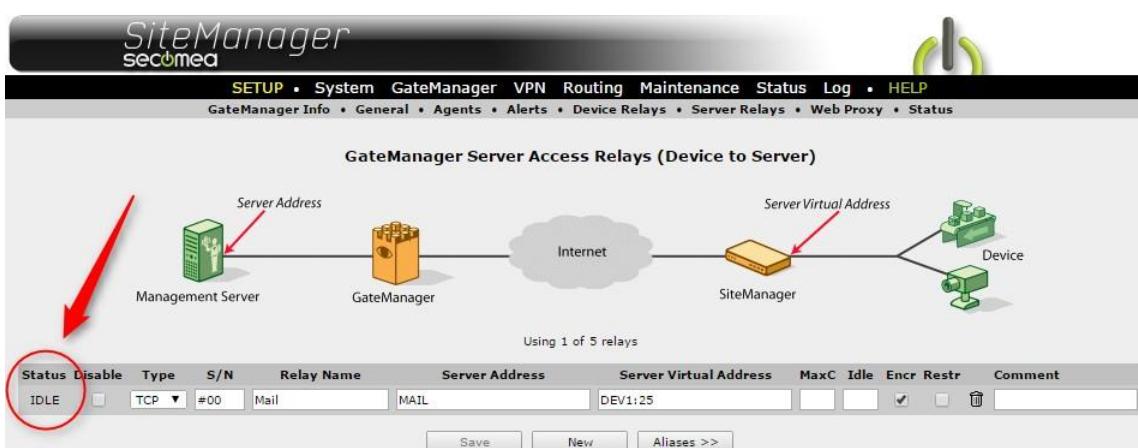
2.1.3. Setup SiteManager if you are using your own GateManager

When using your own GateManager you can follow the same procedure as in section 2.1.2 but you need to ensure that the GateManager is setup to support the MAIL relay alias.

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Refer to **Appendix B** for configuring the GateManager settings for supporting mail relaying.

2.1.4. Using SiteManager as transparent Router/Gateway for Email messages

You can use the SiteManager's ability to function as a plain router for devices on the DEV side of the SiteManager.

2.2. Scenarios – Transparent Email sending

### 2.2.1. Sending Emails via Corporate network (Uplink1)

This scenario requires that the PLC has access to a corporate mail server on the Uplink side. Note that there may be restrictions to relaying on such a server, and that emails are sent with the customers SMTP server as source, but still with the Email address specified by the device. You may have to adapt the email to match the SMTP server's mail domain, in order to avoid blacklisting and spam filters. In any case be careful about using this solution, as you device emails could be cause for blacklisting the corporate mail server, and thus affecting all mail users at the company.

Legend:
- SMTP (email) traffic
- ALERT Heart beat
- URL or UDP/TCP Script
- Serial AT commands
- Digital Input trigger
- SMS Message
- Status heart beats
- Status monitoring

PLC/HMI

Ethernet
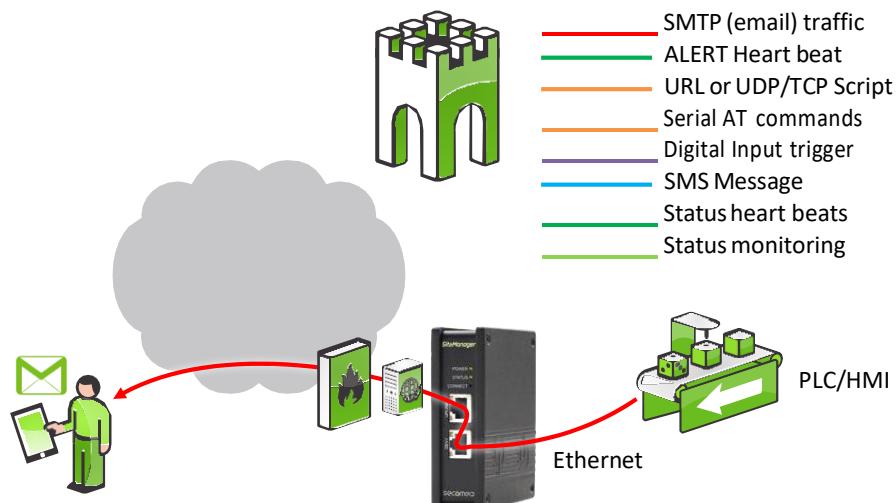
2.2.2. Sending Emails via 2G/3G network (Uplink2) – model xx39 only

This scenario will use the ISPs SMTP server.

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Legend:
- SMTP (email) traffic
- ALERT Heart beat
- URL or UDP/TCP Script
- Serial AT commands
- Digital Input trigger
- SMS Message
- Status heart beats
- Status monitoring

PLC/HMI

Ethernet
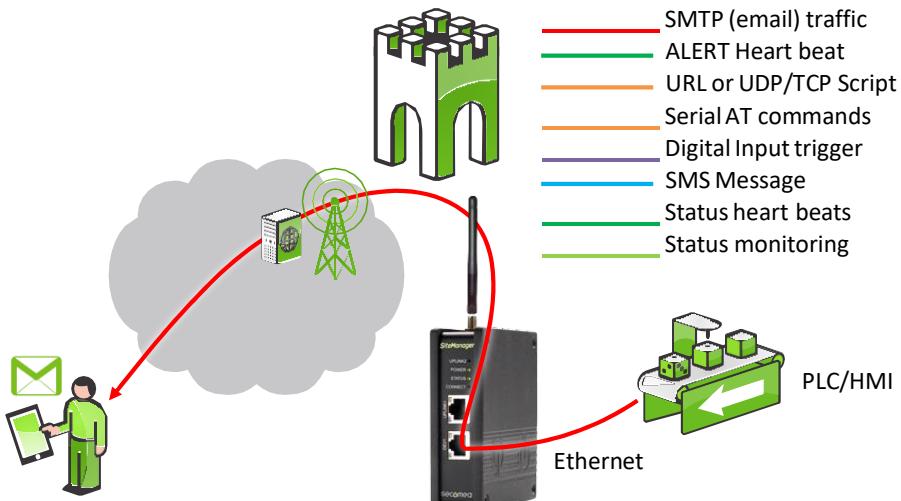
2.3. Sending Emails via Routing Agent

You can create a Routing agent in the SiteManager, and specify the devices in the DEV network that should be allowed to access the Uplink side.

In this example Routing is allowed for the addresses 172.16.16.223 and 172.16.16.225. You can define a maximum of three devices.

The device will address the IP address of a SMTP server on the Uplink side of the SiteManager, and therefore need to know that the SiteManager's DEV address is the gateway to that network. Refer to the Appendix C for details on setting a gateway on a device.

Note that the SMTP server may limit access to specified devices or IP addresses. In this case the source address will be the local Device address.

2.4. Sending Emails via Port Forwarding Agent

You also have the option to create a Forwarding agent in the SiteManager, and devices on the DEV side will address the SiteManager's DEV port as SMTP server address. For this you need to know the IP address and port number of the target SMTP server.

There are various ways to configure the forwarding rule, depending on how strict you want to limit access.

In this example a forwarding rule is applied to the DEV1 port IP 10.0.0.1, which forwards TCP port 25 to the SMTP server at IP address 172.16.17.160 on the Uplink side.

Note that the SMTP server may limit access to specified devices or IP addresses. So you may have to apply the Uplink Source Translation parameter (+TUP) to the forwarding rule, which will source NAT the connection and let the SMTP server allow access for the SiteManager's Uplink address as source for the mail connection.

For more information on creating forwarding rules, refer to the SiteManager online help and the separate guide "Using the Forwarding- and Routing (SCADA) Agents on SiteManager".

3. SiteManager Local Alerts using URL or UDP/TCP Script (Ethernet port)

3.1. Format for sending SMS or Email messages from Ethernet device

3.1.1. Conditions for Device connections

In the GateManager > Alerts menu in the lower section, you find the options related to the TCP/UDP formatted Alert commands.

- The port numbers specify the ports on which the SiteManager will listen for UDP/TCP commands.

- The Alert Recipient is used as default recipient only when the script does not contain an SMS or Email recipient.

- The Alerts User Name and Password are used for limiting UDP/TCP requests from devices that includes the User Name and Password specifies a User Name and/or password that match the values of these fields.

To further ensure that only a known device, such as a PLC or HMI, can use the alert services you must create an agent for the device – any agent will do, and the device can be on either the DEV- or UPLINK network. In the example below the Siemens PLC has the IP address 172.16.16.191:

3.1.2. Secomea proprietary Alert command format:

The following syntax can be used for sending an alert by TCP or UDP to the SiteManager:

/UserName/PassWord/MobilNumber/AlertText

UserName - The User name must match the configured value in the Alert page see above.

PassWord – The password must match the configured value from the Alert page (see above).

MobileNumber – The mobile phone number intended for the message. Country code can be included but is not required.

AlertText.

Example 1:

/+4511223344/Message text 1 to be send.

Example 2:

/11223344/"Message Text 2 to be send"

Example 3:

/<alert@acme.com>/Message text 3 to be send.

Example 4, when no recipient number or Email is specified, the number specified as "Alert Message Recipients" on the SiteManager Alert page is used (if not filled, the message will be discarded):

/"Message Test 4 to be send."

Example 5, when Agents Alert User name and Password are specified in the SiteManager Alert page is filled, the values must be entered into the command (if not, the message will be discarded)::

/User1/pass1234/+4511223344/Message text 5 to be send

Or if forcing use of the Agent Alert Recipient settings in the SiteManager configuration:

/User1/pass1234/0/Message text 5 to be send

/User1/pass1234//Message text 5 to be send

3.1.3. The SMS Compatibility mode format

The SiteManager SMS Compatibility mode format is to a large degree compatible with the SMS messaging script format specified for the Siemens Scalance modems, and published on the Internet:

"http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo&lang=en&objid=54361177&caller=view"

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In most cases the SiteManager will support the programming blocks based on this format.

Compatibility mode format:

UserName#PassWord#CommandCode#Seq-Num;Callnumber;Message:

No leading character and the separator here is the number sign **#** and **;** - the message is terminated with a colon ':'

Example 1: *User1#Pass1234#105#01;+4512312344:*

UserName – User name must match the configured value from the Alert page (see previous chapter). Maximum character length is 10.

PassWord – Password must match the configure value from the Alert page (see previous chapter). Maximum character length is 10.

CommandCode – This is always 105 and must not be set different.

Seq-Num – The sequence number is currently not supported and should be 01 and must not be set different.

Callnumber - Call number of the SMS recipient. Limited to 40 characters. International prefix (+45) can be included but is not required.

Message – SMS messages with the maximum of 160 characters.

':'   - The message is ended with a colon ':'

3.1.4. Connection timers

The Alert is transmitted immediately when the TCP session from the device that request the alert transmission is <u>closed</u>. If the device does not close the TCP session, the message will be send within 3 seconds after the SiteManager has received the complete message. If the device has not closed the connection within 30 seconds, the SiteManager will force closing of the session.

3.1.5. Sending messages using a WEB Browser (URL)

for testing and troubleshooting you can use a web browser to send SMS and Email messages, by typing e.g. the following in the address bar:

http://<address of the SiteManager>:<port>/SMS/<number>/<text message>

Example 1:

http://172.16.16.187:26864/SMS/+4511223344/testing_SMS

Example 2:

http://172.16.16.187:26864/SMS/%3Calert@acme.com%3E/testing_SMS

NOTE: "<" and ">" must be entered with their hex values %3C and %3E respectively. Also note that the URL specifies SMS also for Email. This is intentional.

3.1.6. Sending messages using HTTP requests

Note: This feature is experimental, and is subject for elaboration in a future version of this guide. Please contact your local representative or support@secomea.com for more information.

To send an SMS via HTTP request, use

   GET /SMS/number/messsage_text

   POST /SMS/number (contents is raw sms message text)

Note: It is possible to add a leading + in the number.

Optional /username/password must follow /SMS par in URL.

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4. SiteManager Local Alerts using AT commands via (Serial port)

With a serial connection (RS232) between the PLC and the SiteManager you can use the SiteManager as serial modem for sending SMS and Email messages using the standard AT-command set.

Enable serial Alert messaging system by setting the Serial interface to SMS Modem (also if you intend to send email messages generated by AT commands):

Select **System > Serial** and set **Protocol** = "SMS Modem"
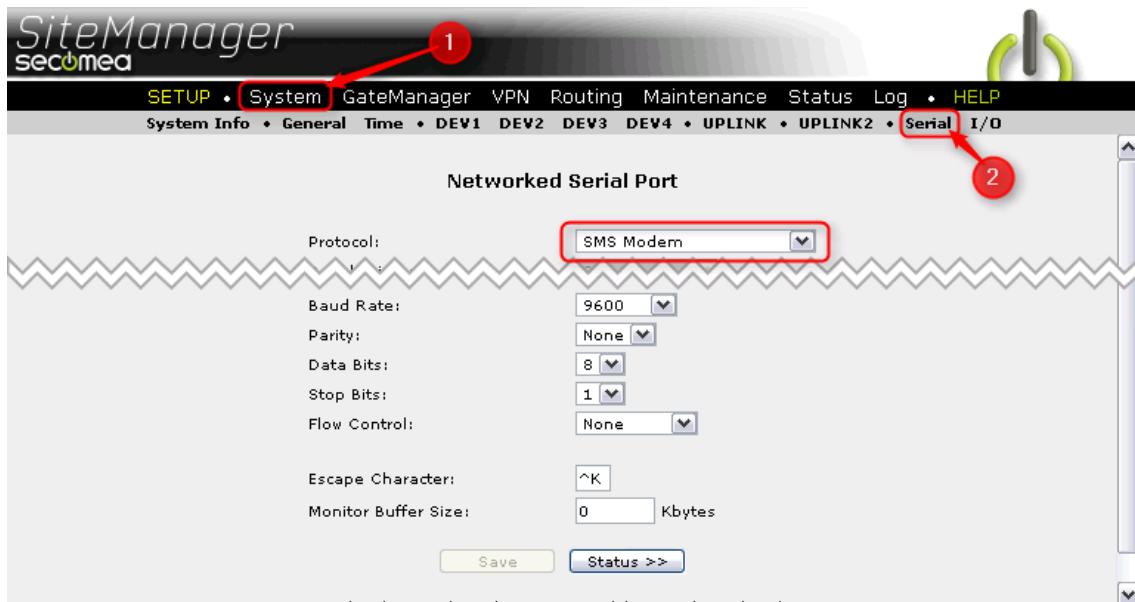
NOTE: When enabling SMS Modem, the Serial port <u>cannot</u> be allocated a Serial agent

4.1. Script for sending SMS or Email messages via Serial port

4.1.1. Standard AT-Command format for sending messages:

`AT+CMGS=<recipient><CR><message><  ctrl-z>`

<recipient> – the mobile number (with or without the international prefix) or email intended for the message, Email address should be entered in < >.

<CR> – (Hex:0D)Carriage Return

<message> – The text message to be transmitted (Max 160 char).

<Ctrl-z> - (Hex:1A)ends the message string.

4.1.2. Secomea Proprietary AT-Command format for sending Alerts:

`AT+SMS=<recipient>/<message><CR>`

This format might be easier to implement in higher level programming.

<recipient> – the mobile number (with or without the international prefix) or email intended for the message. Email address should be entered in < >.

/ - "forward slash" separates the recipient and the message string.

<message> – The message string to be transmitted (Max 160 char).

<CR> - (Hex:0D) Carriage Return ends the message string.

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The AT+ portion of the command must be transmitted within half a second or it will not be recorded as a command by the SiteManager.

After the AT+ command you have 5 seconds to send the remaining part.

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5. SiteManager Local Alerts triggered by Digital Input ports

The SiteManager has two Digital Input ports that can be used for triggering SMS messages. Both On and Off states can trigger a specific text string.

Refer to the guide "SiteManager xx29/xx39 - Working with I/O Ports" for details on electrical details and wiring.

By entering script commands in the "Alert Recipient" field, you can enable the SiteManager to send the message to multiple recipients and even specific recipients depending on the time of day or week. Refer to the online help for details about the scripting format.

5.1. Enabling Digital Input Alert

Select the menu **GateManager > Alerts**, and ensure that Alert mode is Enabled:

Input Alert state – Enable and set the state of the input alert to be triggered. State can be ON, OFF or both.

Note: That Input 1 is default assigned to control GateManager access. Refer to next section **5.1.1** for information on how to disable this, so you can use Input 1 for other purposes.

Alert Recipients – The Mobile numbers or email addresses of the recipient(s). More numbers must be separated by comma ',' colon ':' or space. Email addresses should be entered in < >. In this field you can also enter script commands ref. Input Alert Scheduling below.

Alert ON Text – Here you can specify the alert text sent when the INPUT goes ON (and you have requested an alert for "ON" state).

Alert OFF Text - Here you can specify the alert text sent when the INPUT goes OFF (and you have requested an alert for "OFF" state).

Alert Scheduling - As mentioned above, it is possible to define an Alert Schedule to control which mobile numbers will receive an alert at different times of day and week.

For example, if you have a day-time number 11223344, a night-time number 55667788, and a weekend number 99009900, you can enter the following schedule in the relevant Alert Recipient field. Each of the {...} blocks specifies a time frame for the following recipient(s):

{m-f 6:30-17} 11223344 {m-th 17-6:30, fr 17-24} 55667788 {} 99009900

You read this from left to right as follows: From Monday (m) to Friday (f) at 6:30 to 17:00, call 11223344; or from Monday to Thursday (th) at 17 to 6:30 next morning, and on Friday from 17 to midnight, call 55667788; if no preceding numbers are called, then call 99009900.

As you can see the last {} form specifies "the remaining periods".

Some details:

- Time-of-day is specified as hour or hour:minute, using 1 or 2 digits: H, HH, H:MM, HH:MM

- 24 hour clocks are used, 24:00 equals 0:00 the next day.

- Weekdays are specified as one or two letters: m mo tu w we th f fr sa su

- Ranges are specified as m-f and lists as m,w,f-su

- Times and dates follows the UTC time zone (unless you specify otherwise in menu System > Time).

5.1.1. Disabling default function of Input1 (GateManager Access control)

The Input 1 port is default assigned to control GateManager access. Setting this port ON will trigger your configured Input1 Alert, but will also disconnect the GateManager connection, which may not be desired.

To verify that the default function is enabled GateManager Action will read "Toggle GateManager Access"

Enter the menu GateManager > General, and select More >>

Change the Input1 Action to **None**

Note: You can also change it to Trigger Input1 if ON/OFF, which will make the trigger also appear on the GateManager, where it can be controlled by the "GateManager controlled Alerts" ref. section 8. This will not affect the functionality for the local Alert you have configured for Input1.

6. SiteManager local Alert Scenarios

6.1. Sending Email locally via Corporate network (Uplink 1) port

The advantage of this solution is that the Email is sent also when no GateManager connection is present.

But they may be restrictions to relaying on such a server (e.g. requirement for login, or accept for the source IP), and that emails are sent with the customers SMTP server as source, but still with the Email address specified by the URL, UDP/TCP script or Input trigger fields in the SiteManager. You should be careful about using this solution, as you device emails could be cause for blacklisting the corporate mail server, and thus affecting all mail users at the company.

This scenario requires the following setup of Alert Gateway (Menu GateManager > Alerts):

And also that that you configure local SMTP settings that corresponds to the local SMTP server you want to use.

Refer to the online help for details on the parameters

6.1.1. Sending Email locally via 2G/3G network (Uplink 2) port – xx39 models only

The advantage of this solution is that the Email is sent also when no GateManager connection is present.

But they may be restrictions to relaying on such a server (e.g. requirement for login, or accept for the source IP).
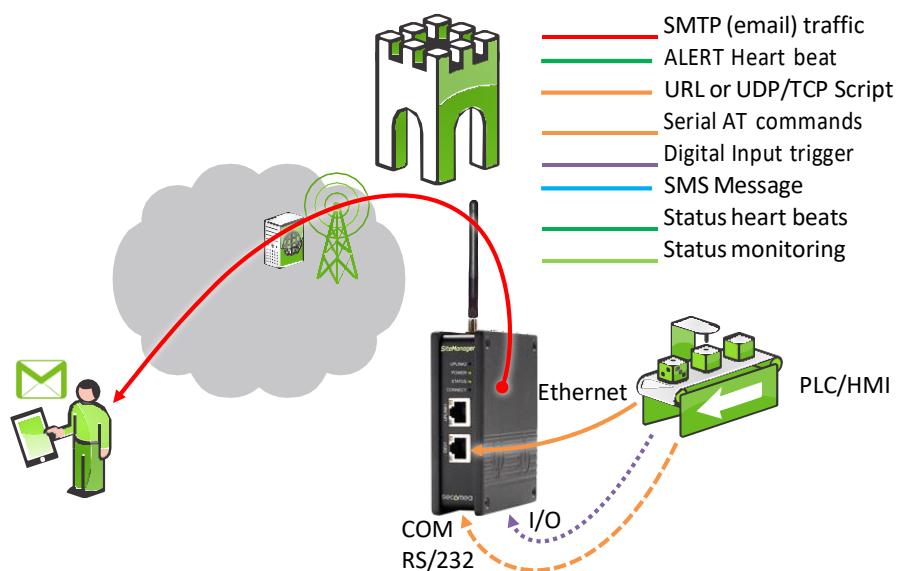

This scenario requires the same configuration settings as explained in the previous section.

Important to understand is that there is only one set of SMTP settings. So if the SiteManager is doing failover between Uplink1 and Uplink2, it will only be able to send Email messages when connected to the Uplink for which the SMTP parameters correspond.

The Email will be sent using the recipient email address as sender (e.g. if sent by alert@acme.com, the sender will be alert@acme.com also), so the recipient will identify the message based on its subject or body text. See chapter **7** for details on the message appearance.

6.1.2. Sending Email via GateManager (Uplink 1 or 2)

NOTE: This illustration shows a SiteManager connected via Uplink1 (Ethernet). The connection to the GateManager can, however, be either Uplink1 or Uplink2 (2G/3G).

This scenario requires the following setup of Alert Gateway (Menu GateManager > Alerts):

Alert Mode:	Enabled ▼
Alert Identification:	None ▼
Email Alert Gateway:	GateManager ▼
	SiteManager
SMS Alert Gateway:	GateManager NK2) ▼
SMS Service Center Number:	(SIM: +4540390999)
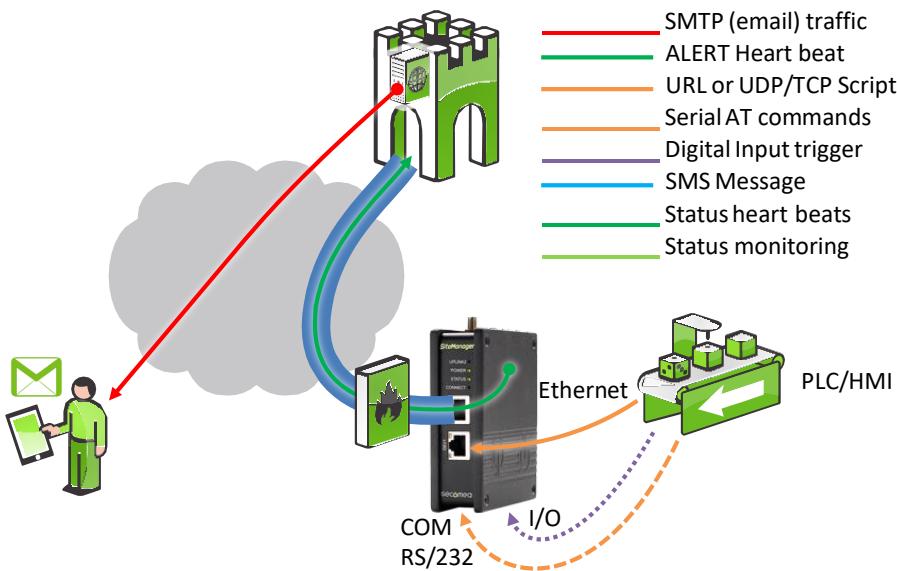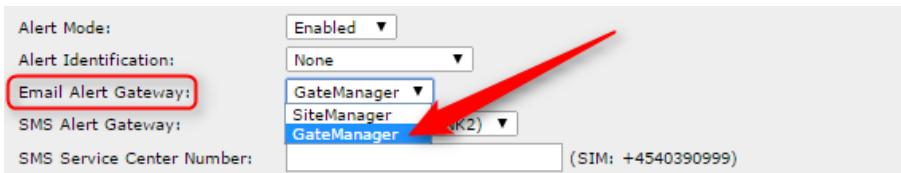
The Email will be sent with the GateManagers sender domain as sender (e.g. do-not-reply@gatemanager.dk), so the recipient must be able to recognize the email based on its subject or body text. See section Error! Reference source not found. for details.

6.1.3. Sending SMS locally via 2G/3G network (Uplink2) port – xx39 models only

This scenario requires the following setup of Alert Gateway (Menu GateManager > Alerts):

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| Alert Mode: | Enabled ▼ |
Alert Identification:	None ▼
Email Alert Gateway:	GateManager ▼
SMS Alert Gateway:	SiteManager (UPLINK2) ▼
	SiteManager (UPLINK2)
SMS Service Center Number:	GateManager	(SIM: +4540390999)

6.1.4. Sending SMS via GateManager (Uplink 1 or 2)

The advantage of this solution is that all SMS messages are logged on the GateManager, and SMS submission is supported also by SiteManagers without integrated modem (xx29 models)

SMTP (email) traffic
ALERT Heart beat
URL or UDP/TCP Script
Serial AT commands
Digital Input trigger
SMS Message
Status heart beats
Status monitoring

Ethernet

PLC/HMI

COM
RS/232

I/O
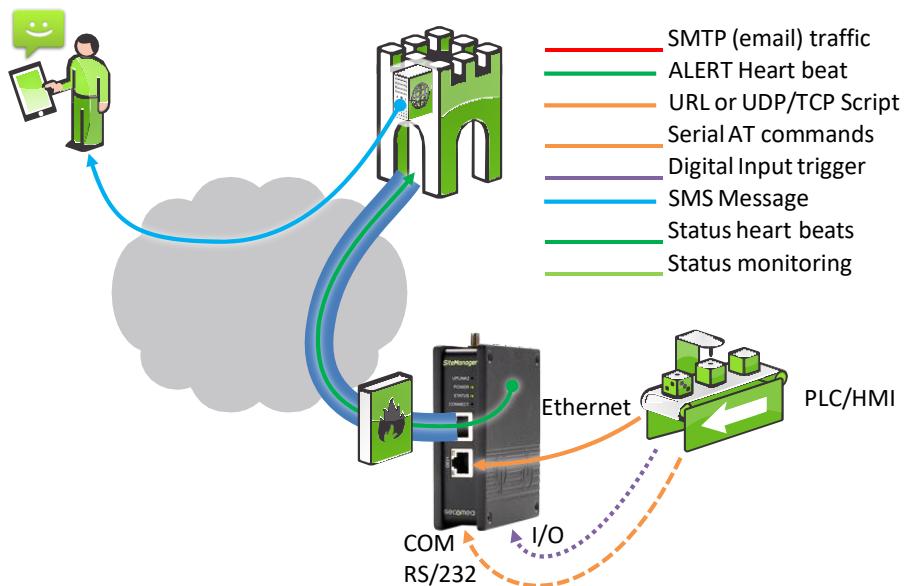
This setup requires that the GateManager supports SMS, and that SMS has been enabled for the Domain in which the SiteManager is connected. You can check the availability of SMS in the SiteManager menu GateManager > Alerts.

Alerts

GateManager has gateway support for SMS and Email alerts

Input Port	State	GateManager Action	Local Alert Action
IN 1	ON	None	SMS ON/OFF to
IN 2	ON	None	Email ON to <l > via GM

Alert Mode:	Enabled ▼
Alert Identification:	None ▼
Email Alert Gateway:	GateManager ▼
SMS Alert Gateway:	GateManager ▼
	SiteManager (UPLINK2)
SMS Service Center Number:	GateManager	(SIM: +4540390999)

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7. Appearance of Emails generated by local Alerts

When sending an Email using UDP/TCP Scripts, URL or using the Input trigger text field in the SiteManager, the final formatting will depend on the setting of the Email Alert Gateway and Alert Identification settings in the GateManager > Alerts menu in the SiteManager.

In the following examples, make notice of the settings in the SiteManager, and, the "from" address and the Email Subject, which are not controlled by the Email string. In all examples the message could have been sent using the following URL string:

http://172.16.17.138:26864/SMS/%3Cph@secomea.com%3E/test_MAIL

or as UDP/TCP Script:

/<ph@secomea.com>/test_MAIL

or as specified for an Input port trigger configured in the SiteManager:

Input 2 Alert:	Alert when ON
Alert Recipients:	<ph@secomea.com> [Test]
Alert ON Text:	test_MAIL
Alert OFF Text:	

Example 1

Settings in SiteManager

Alert Mode:	Enabled
Alert Identification:	None
Email Alert Gateway:	SiteManager
SMS Alert Gateway:	SiteManager (UPLINK2)
SMS Service Center Number:	(SIM: +4540390999)

Resulting Email:

From:	SM3439_11_6E(Fullrate) [ph@secomea.com]
To:	Peter Hansen
Cc:	
Subject:	Agent Alert from SM3439_11_6E(Fullrate)

test_MAIL

Example 2

Settings in SiteManager

Alert Mode:	Enabled
Alert Identification:	None
Email Alert Gateway:	GateManager
SMS Alert Gateway:	SiteManager (UPLINK2)
SMS Service Center Number:	(SIM: +4540390999)

Resulting Email:

From:	GateManager [do-not-reply@gatemanager.dk]
To:	Peter Hansen
Cc:	
Subject:	Agent Alert from PH PC (SM3439_11_6E(Fullrate)) - 172.16.17.160 in PH Inc

test_MAIL

Example 3

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Settings in SiteManager

Alert Mode:	Enabled ▼
Alert Identification:	All Alerts ▼
Email Alert Gateway:	GateManager ▼
SMS Alert Gateway:	SiteManager (UPLINK2) ▼
SMS Service Center Number:		(SIM: +4540390999)

Resulting Email:

From:	GateManager [do-not-reply@gatemanager.dk]
To:	Peter Hansen
Cc:	
Subject:	Agent Alert from PH PC (SM3439_11_6E(Fullrate)) - 172.16.17.160 in PH Inc

```
SiteManager Alert
-----------------

test_MAIL
Agent: PH PC
SM: SM3439_11_6E(Fullrate)
```

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8. GateManager controlled Alerts (vs. Local Alerts)

The GateManager monitors and gets updates about the status of a SiteManager based on the persistent connection with the SiteManager. Status of the SiteManager itself can be subject for GateManager alerts, based on the availability of the connection.

But GateManager will also receive event updates from the SiteManager on equipment connected to the SiteManager and configured as agents or if a digital Input port is triggered.

In these cases the SiteManager is not itself sending or executing the Alert; instead the GateManager is responsible for this logic.

SMTP (email) traffic	
ALERT message	
URL or UDP/TCP Script	
Serial AT commands	
Digital Input trigger	
SMS Message	
Status heart beats	
Status monitoring	
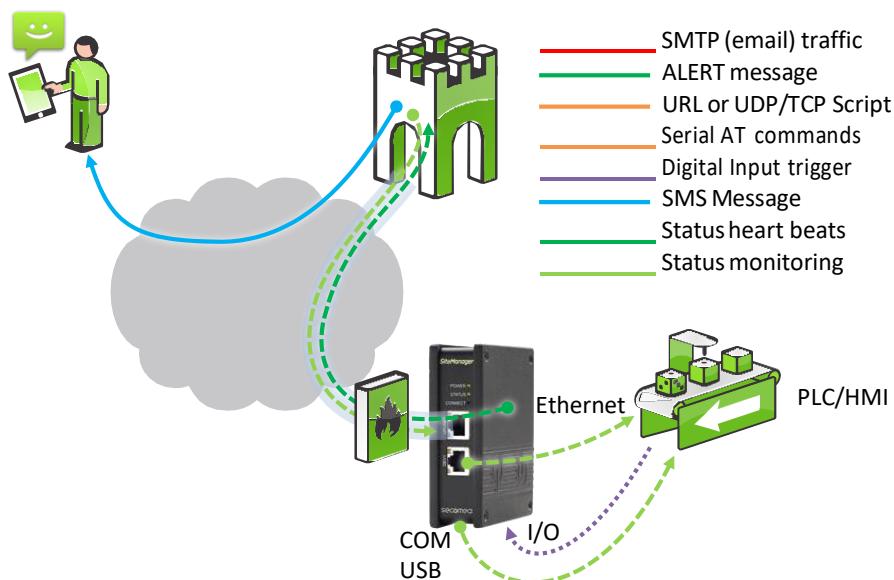
8.1. Configuring Input port triggered GateManager alerts

By default a SiteManager is configured to not send Local Alerts, and the configuration would look like this:

You will notice that the Alert status table shows something called "GateManager Action", which means triggering Input1 will by default disconnect the GateManager connection. This will not generate a status message to the GateManager, or generate an alert.

Hint: If it is actually desired to sent an alert when the GateManager access is disconnected using Input1, you can just make an Alert definition on the GateManager based on the SiteManager going offline. See section ??

If you want to control in more details which Input triggered signals should result in an alert trigger to the GateManager, you should enter menu GateManager > General and click More >>
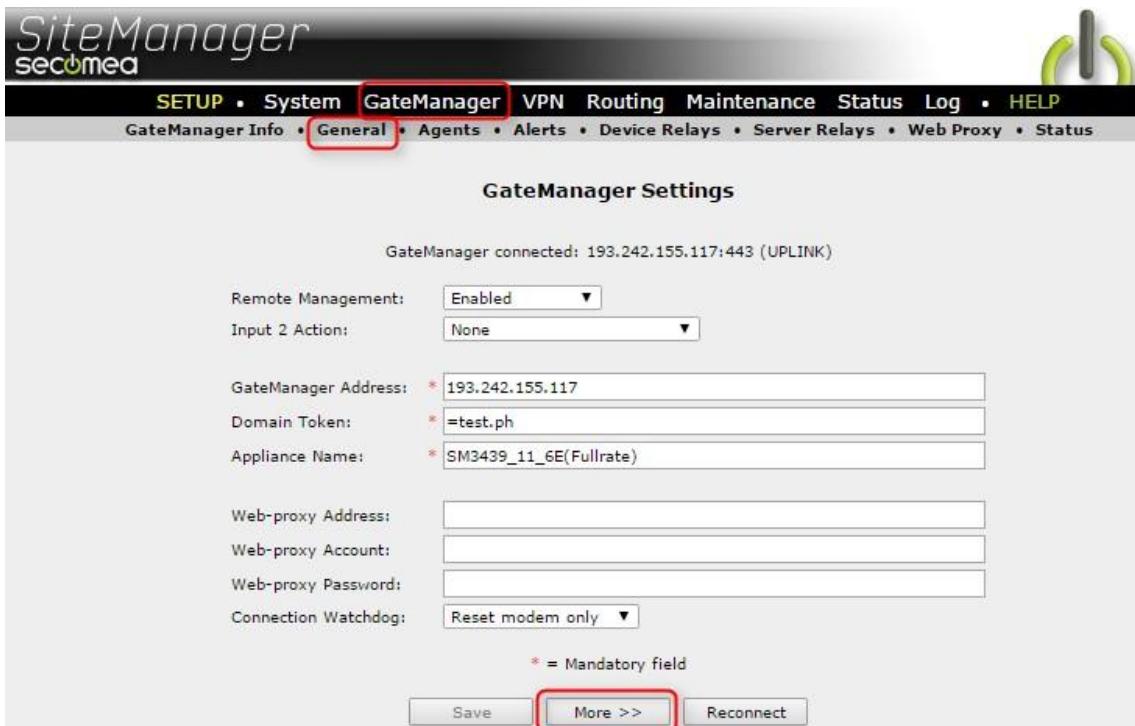
Now you can control for both Input1 and 2 when a signal should be sent to the GateManager based on triggering of Input 1 or 2.
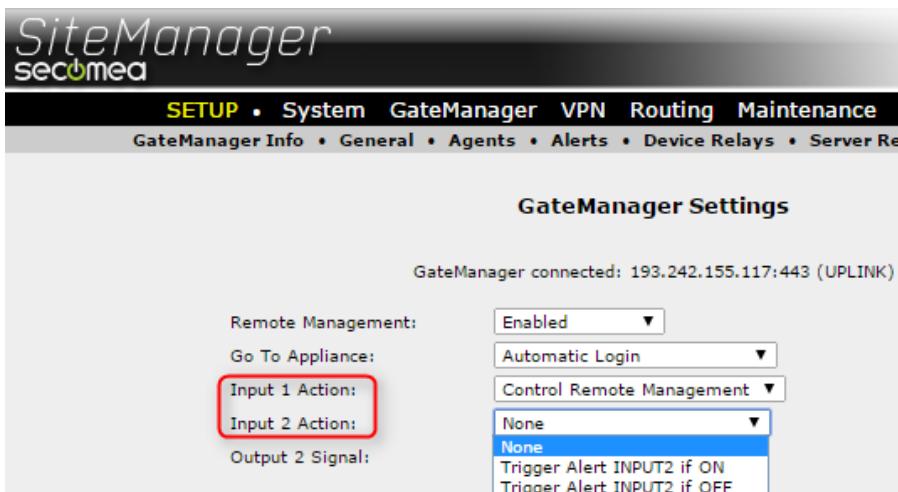
8.2. Create GateManager alert

To create GateManager alerts you need to have a GateManager Domain Administrator account (PREMIUM account).

When logged in ensure that the Alert icon above the tree has a blue background. Now either right click the domain and select "Create Alert", or select the Alert tab to the right, and select the plus sign:

Select a meaningful name for the Alert, as this will become the Alert message text. You can now specify for instance to trigger the alert when Input2 is ON.
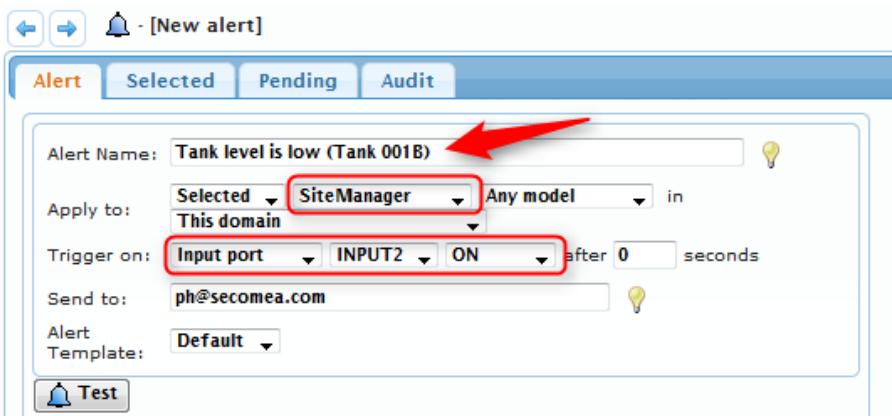
Another idea was to trigger the alert when the SiteManager itself disconnects
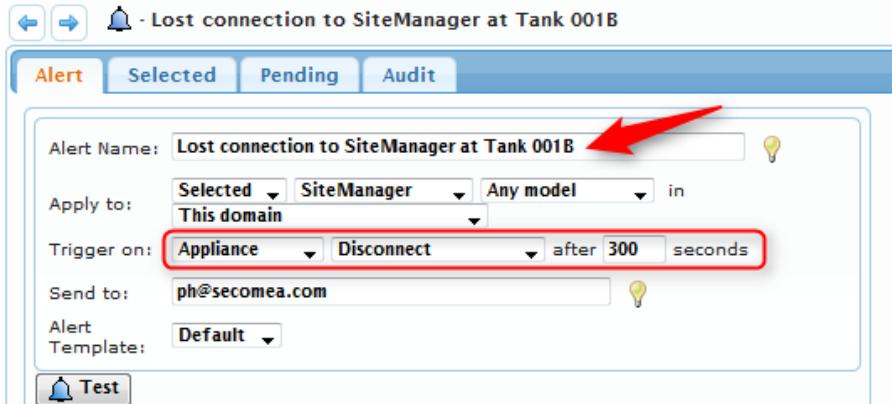
Note in this example that the Alert is not triggered until after 300 seconds. This will ensure that e.g. a brief repower of the SiteManager at the location will not activate the Alert.

HINT: This type of status Alert can be used for any type of appliance including software based SiteManagers (SM-E), LinkManagers and Agents

8.2.1. Associate Alerts with recipients

Alerts recipients can be in form of either:

- Email addresses entered directly into the "Send to" field (enter multiple email addresses separated by comma).

- A Mobile phone number entered directly into the field (only one can be entered). This requires that the GateManager supports SMS, and that SMS services have been enabled for the domain in which the SiteManager is attached.

- An Account, and its associated Email or SMS.

Read more details in the light bulb 💡 next to the Send to field.

Associating an account with the Alert has the advantage that if the Email or Mobile number of the account is changed, it automatically have effect on the alert. In principle you could create a "dummy account", which only purpose is to make a single point of edit of the email or mobile numbers for all Alerts.

Associating an account with an Alert is done as follows:

While standing on the Alert, left mouse click and hold on a account, and drag it into the Send to field of the Alert.
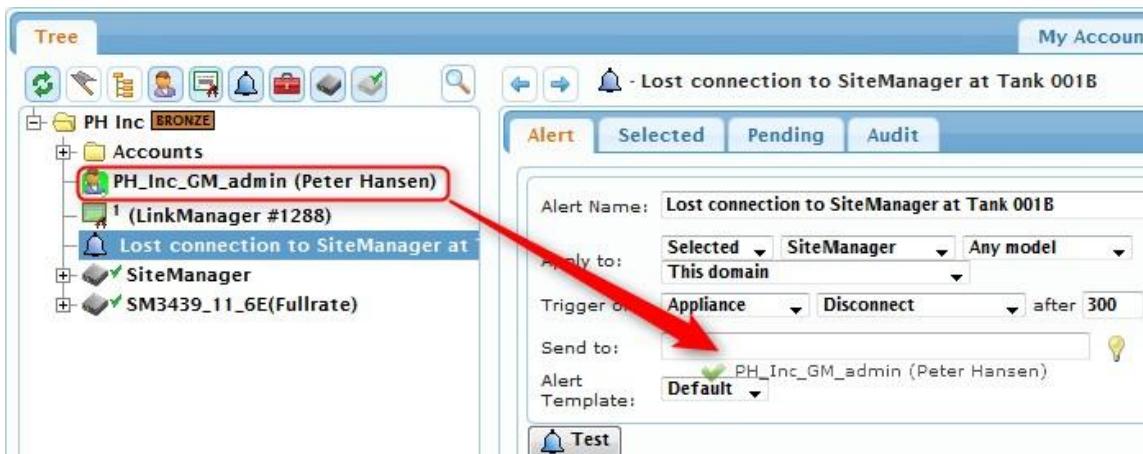
This will associate the account ID with the Alert, and automatically use the Email for the account as recipient
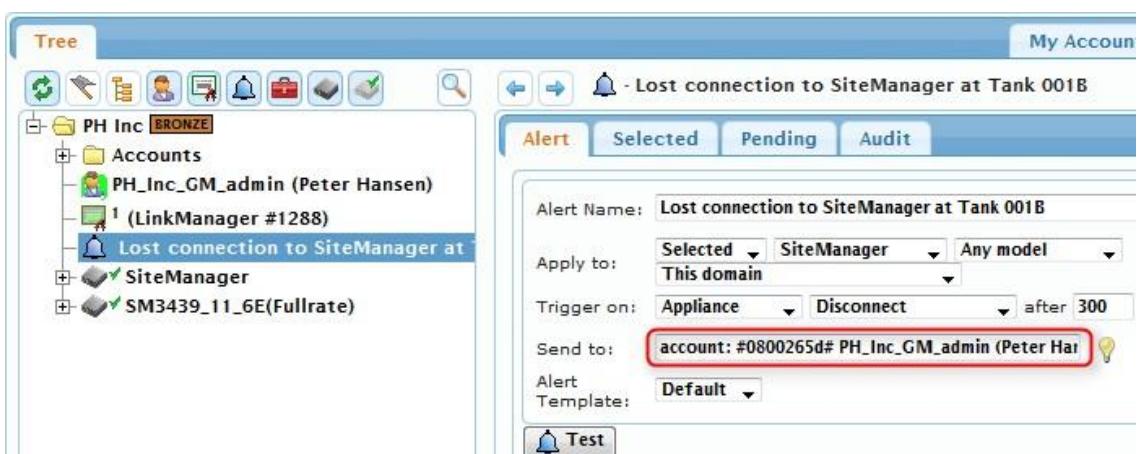
If you want to use the Mobile number specified for the account to send the alert as an SMS instead of an Email, you should replace "account" with "sms" in the Send to field:

NOTE: If specifying "sms" for the account, and a mobile number is not specified for the account or SMS is not supported by the GateManager or SMS services is not enabled for the domain, the alert will automatically be send to the account email.

8.2.2. Associate GateManager alerts with selected SiteManager

When you have created an alert you can associate it to one or more SiteManagers or Agents. This may be for SiteManagers in the same domain as the Agent, or also for SiteManagers in subdomains if the Agent is specified to also apply to sub-domains, as follows:

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9. Reading incoming SMS messages from SiteManager

SiteManager models with integrated modem (xx39 series) allow receiving and queuing of incoming SMS messages, which can subsequently be read by a device via the Ethernet ports, or the Serial port.

The last 10 messages are stored in the SiteManager on first-in first-deleted basis. All messages are deleted on reboot.

NOTE: This section is subject for further details in future version of this guide. If you are uncertain about the functionality, please address your question to your local representative or Secomea support on support@secomea.com

9.1. Reading SMS messages using Ethernet (TCP)

	SMTP (email) traffic
	ALERT Heart beat
	URL or ~~UDP/~~TCP Script
	Serial AT commands
	Digital Input trigger
	SMS Message
	Status heart beats
	Status monitoring
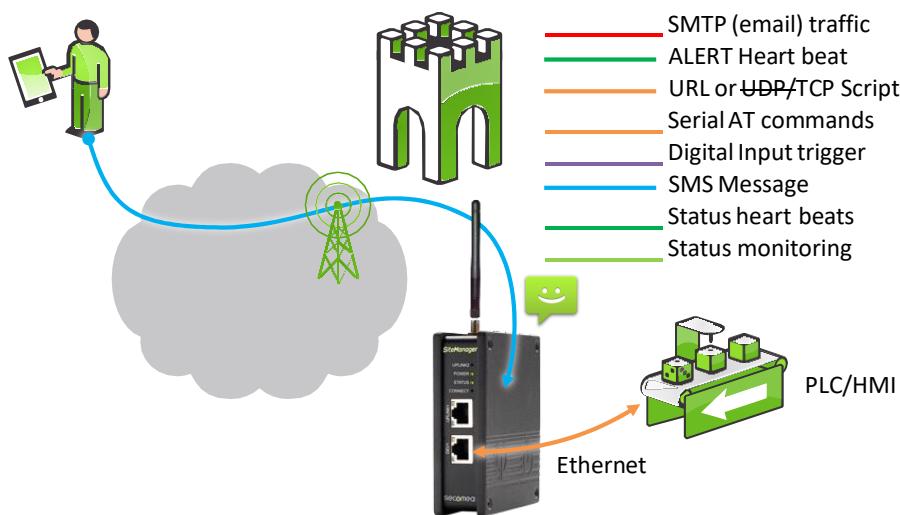
9.1.1. Reading SMS messages using a TCP session

A device can read SMS messages by connecting with TCP on port 26864 on the SiteManager.

This supplements the normal SMS sending format via TCP:

[/username/password] /number/text - send text to number

Command format is:

[/username/password] /command[:[:]PORT]/selector

Where *command* is one of:

- *LIST* - list headers for selected SMS'es
- *READ* - print headers and bodies for selected SMS'es (mark as read)
- *PRINT* - print bodies for selected SMS'es (mark as read)
- *DELETE* - delete selected SMS'es

and *selector* is one of:

- *ALL* - all messages
- *READ* - read messages only
- *UNREAD* (or blank) - unread messages only

- *NEXT* - Reads next unread message (and changes status to read)
  num[,num...] - comma separated list of messages numbers

The port entry defines which port the SiteManager will send the data on. If no port is defined, the SiteManager will respond in the same TCP thread.

One colon means that SM will only make the response connection if there is any response data to send, while two colons will always make the response connection, even when the response is empty.

For example, /READ:12345/NEXT will send next message to port 12345 on the sender's IP - but only if a new message is pending, while /READ::12345/NEXT will send an empty response to port 12345 if no new message is pending.

Supported field separators: CR, NL, CRNL, TAB, / $ & and =.

Note that first character in packet defines the separator!

9.1.2. Reading SMS messages using a WEB Browser (URL)

For testing and troubleshooting you can use a web browser to read the queued SMS messages, by typing the following in the address bar:

http://<address of the SiteManager>:<port>/SMS/<command>

Where command is one of:

- *LIST* - list headers for selected SMS'es
- *READ* - print headers and bodies for selected SMS'es (mark as read)
- *PRINT* - print bodies for selected SMS'es (mark as read)
- *DELETE* - delete selected SMS'es

and selector is one of:

- *ALL* - all messages
- *READ* - read messages only
- *UNREAD* (or blank) - unread messages only
- *NEXT* - Reads next unread message (and changes status to read)
 num[,num...] - comma separated list of messages numbers

Example:

http://172.16.16.187:26864/SMS/LIST/ALL

9.1.3. Reading SMS messages using HTTP requests

You can issue a HTTP requests to the SiteManager using the following commands:

- *GET* /SMS/command/selector
- *POST* /SMS/command (contents is selector)

Where command is one of:

- *LIST* - list headers for selected SMS'es
- *READ* - print headers and bodies for selected SMS'es (mark as read)

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- *PRINT* - print bodies for selected SMS'es (mark as read)
- *DELETE* - delete selected SMS'es

and selector is one of:

- *ALL* - all messages
- *READ* - read messages only
- *UNREAD* (or blank) - unread messages only
- *NEXT* - Reads next unread message (and changes status to read)
  num[,num...] - comma separated list of messages numbers

9.2. Reading SMS messages using a Serial connection (AT-Commands)
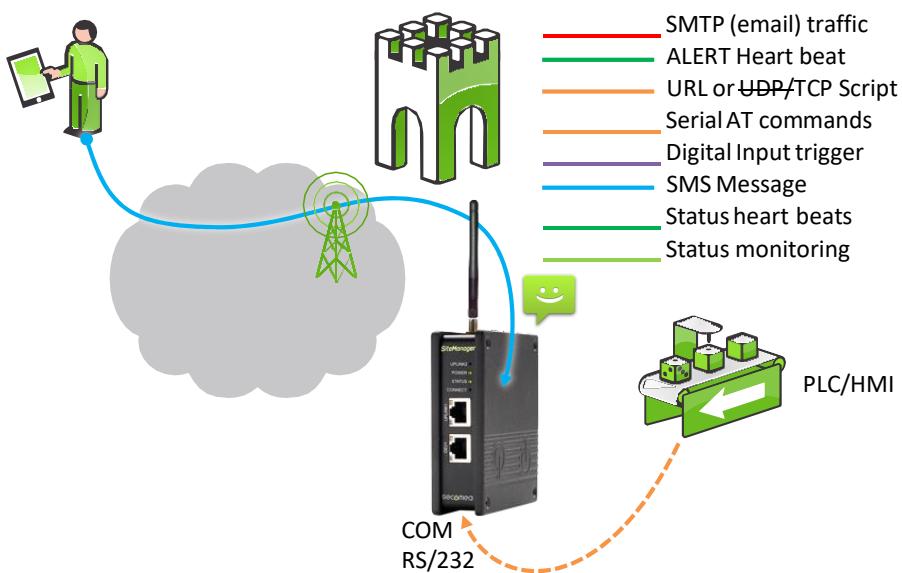
With a serial connection (RS232) between the PLC and the SiteManager you can use the SiteManager as serial modem on which you can read incoming SMS messages using the standard AT-command set.

Enable serial SMS messaging system by setting the Serial interface to SMS Modem:

Select **System > Serial** and set **Protocol** = "SMS Modem"

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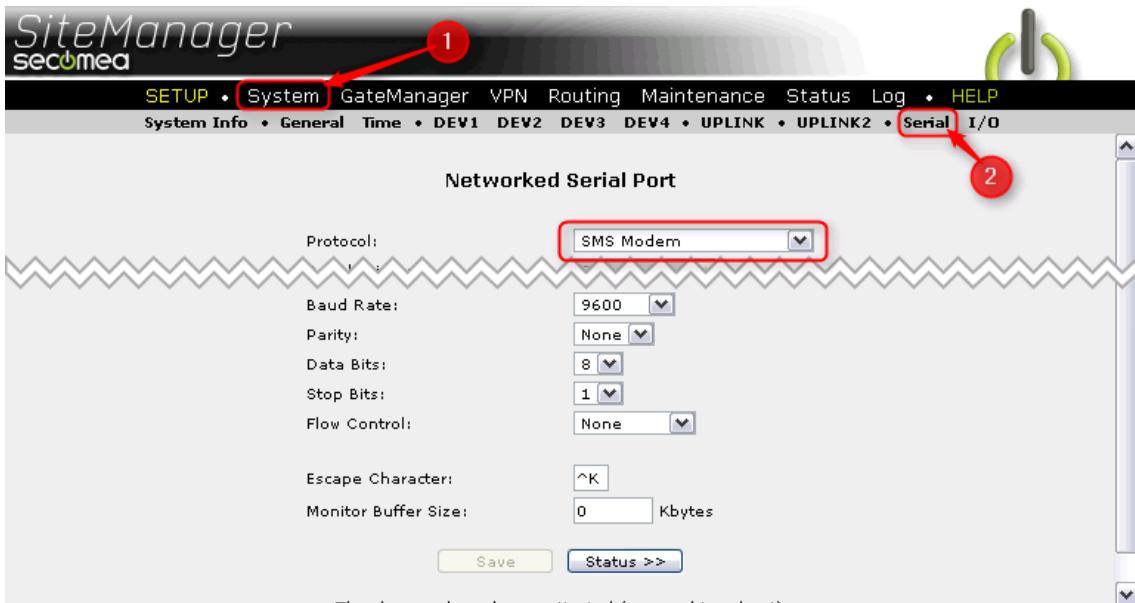
NOTE: When enabling SMS Modem, the Serial port <u>cannot</u> be allocated a Serial agent

Commands supported:

List and read:

AT+CMGL

AT+CMGL=["ALL"|"REC UNREAD"|"REC READ"]

Read:

AT+CMGR=n

Delete:

AT+CMGD=n[,flag] [flag=0..4]

Nice to know:

Receiving an SMS message will generate a +CMTI on the Serial connection.
For example to retrieve SMS number 8 send:

+CMTI: "SM",8

Note: +CMTI is optional but enabled by default (controlled via +CNMI)

The SiteManager has limited support for the commands:

AT+COPS +CSDH +CMGF +CNMI +CSCA

9.2.1. Testing SMS messages using HyperTerminal for Windows

Examples will follow in a future version of this guide.

Appendix A, SMS Compatibility mode examples

You can download code samples for Siemens TIA and CoDeSys from the Secomea web site (in the Documentation section).

Please note that files in that section are provided to us by 3rd party users. These files should be seen as "proof of concept", and do not represent ready-to-use projects. You can use the files "as-is" or as inspiration.

The files are licensed "as-is". You bear the risk of using it. Secomea gives no express warranties, guarantees or conditions. Also, please note that Secomea cannot provide support on the files and their use. "SMS Compatibility mode" has been verified and tested from a Siemens ET 200S PLC, but it should be possible to implement for any other Siemens PLC with a native Ethernet adapter.

This screen shot illustrates how a code block for CodeSys verified on a Wago would look like:

## Testing Compatibility mode SMS from a Siemens PLC

The following shows the steps for manually testing SMS from a Siemens ET 200S PLC, using a block defined in TIA portal.

NOTE: This example is not a guide for programming the block, but is only intended for providing the basic idea of the principles for handling SMS from within a PLC program. Refer to your Siemens documentation for details, or study the code samples found on the Secomea web site.

1. Go online on the PLC
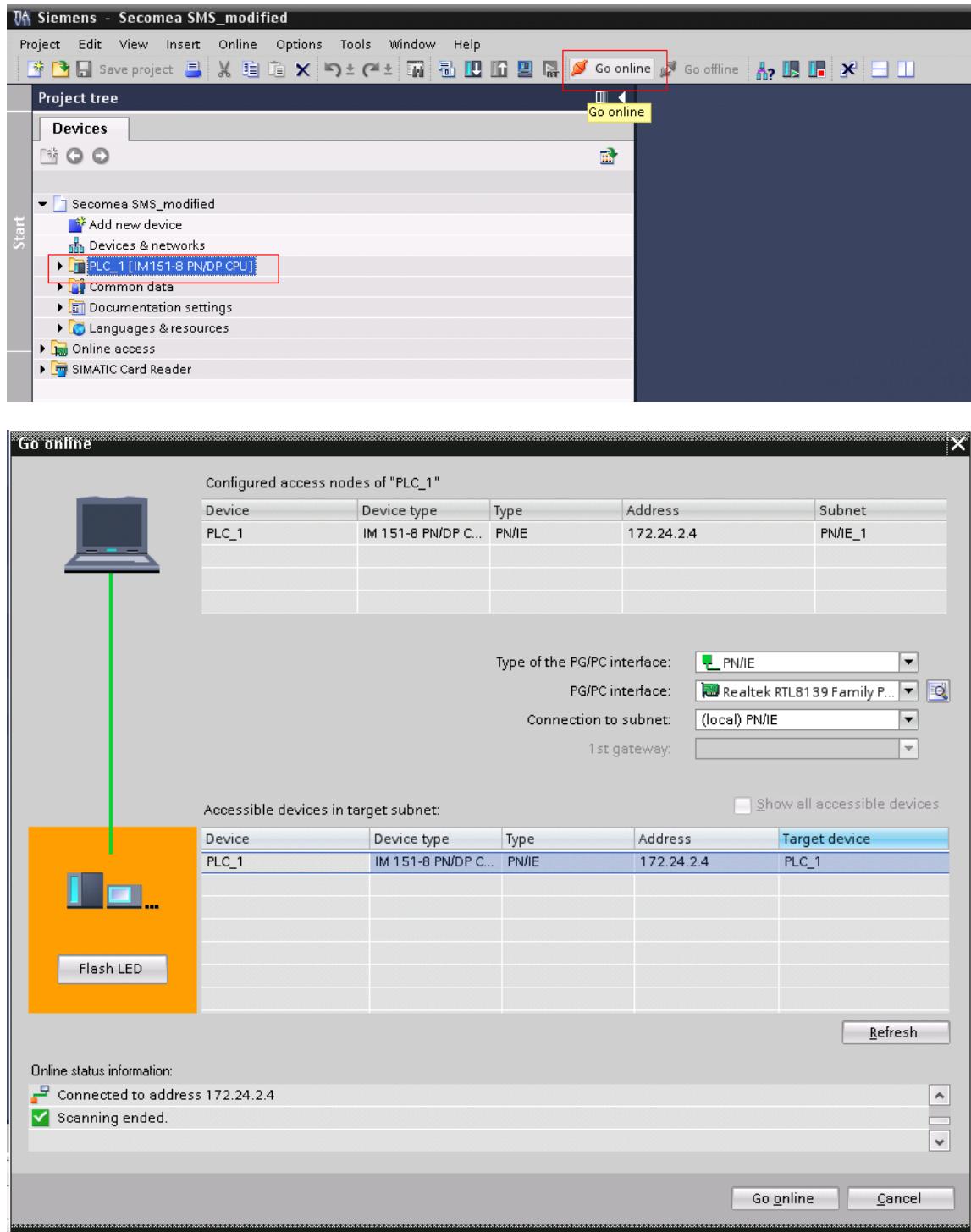
2. Expand the Program blocks and double click on the SMS module.
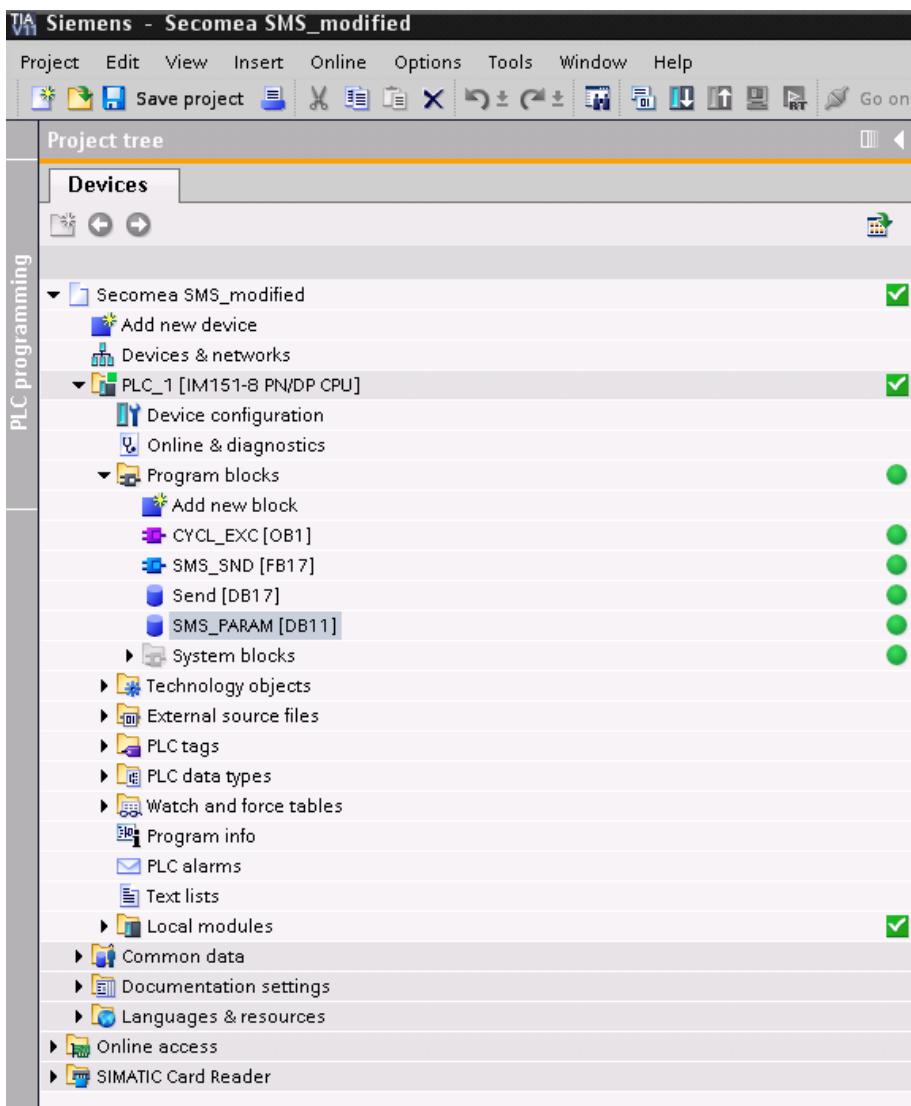
3. Double click on the values (in the Start value column) in order to change them.

Make sure that the telephone number to receive the SMS is correct and the Remote IP address is set to the SiteManagers DEV IP address.

Note that the IP address is entered in HEX (e.g. DW#16#**AC180203**" = 172.24.2.3)

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4. Remember to download to device whenever you have changed something:

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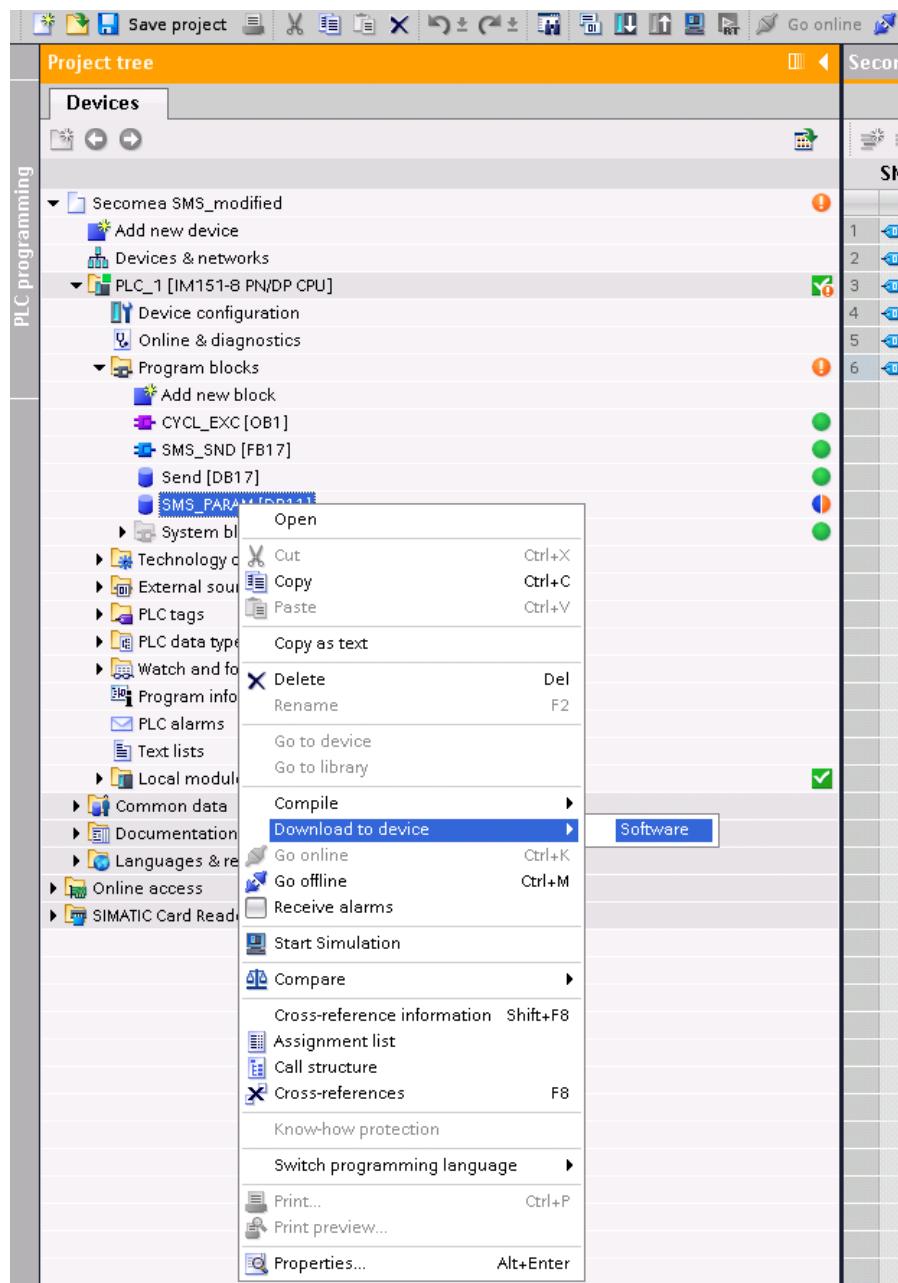
5. Because OB1 depends on the value from DB11, OB1 also needs to be compiled and downloaded again. Click overwrite, and Load
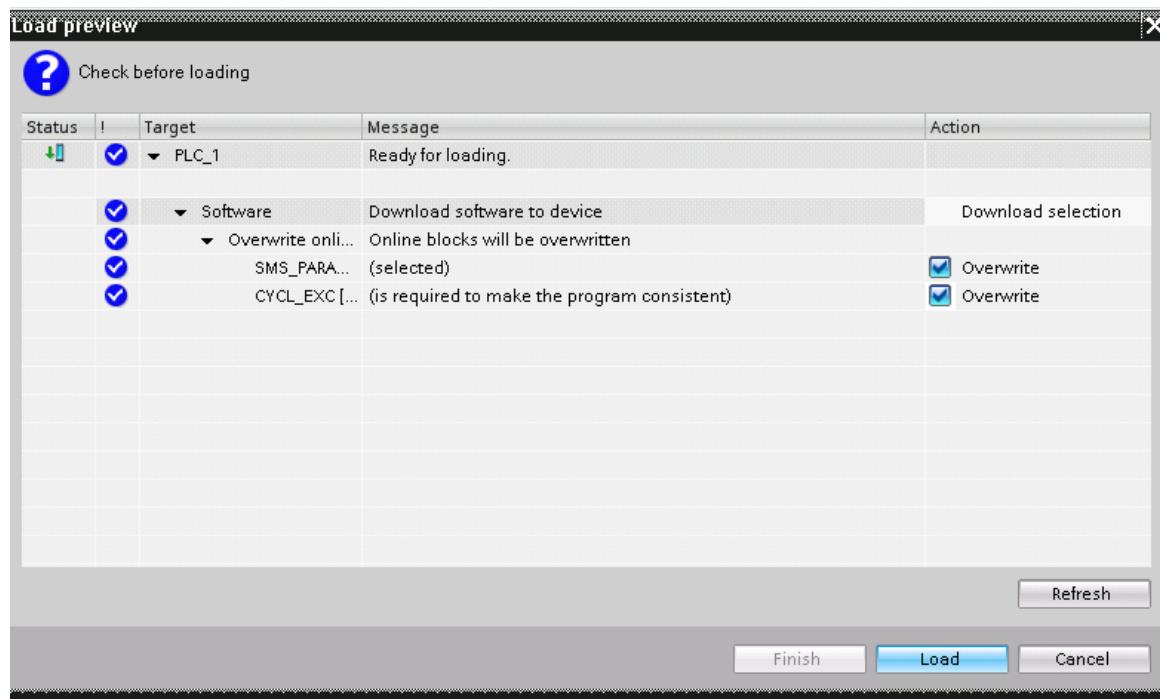
6. To send an SMS, double click on CYCL_EXC [OB1]

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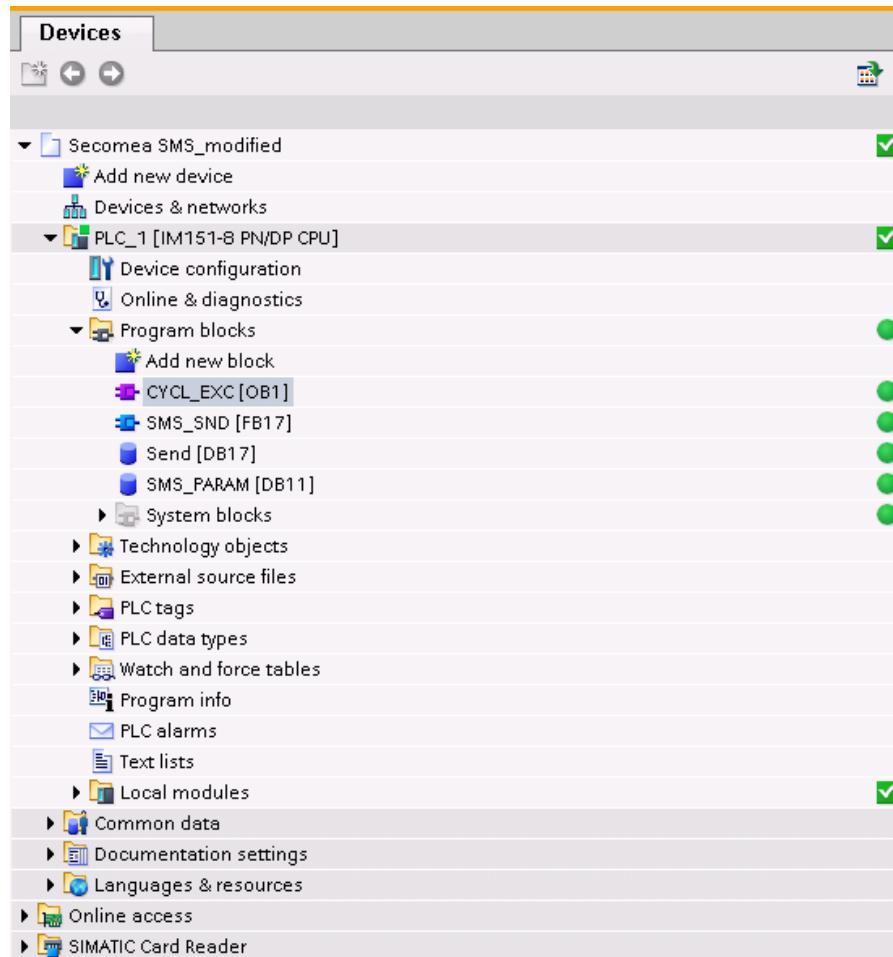
7. Monitor the data (click the glasses)

8. Set "sms_send" to 1 – REMEMBER to set it back to 0 again right after.

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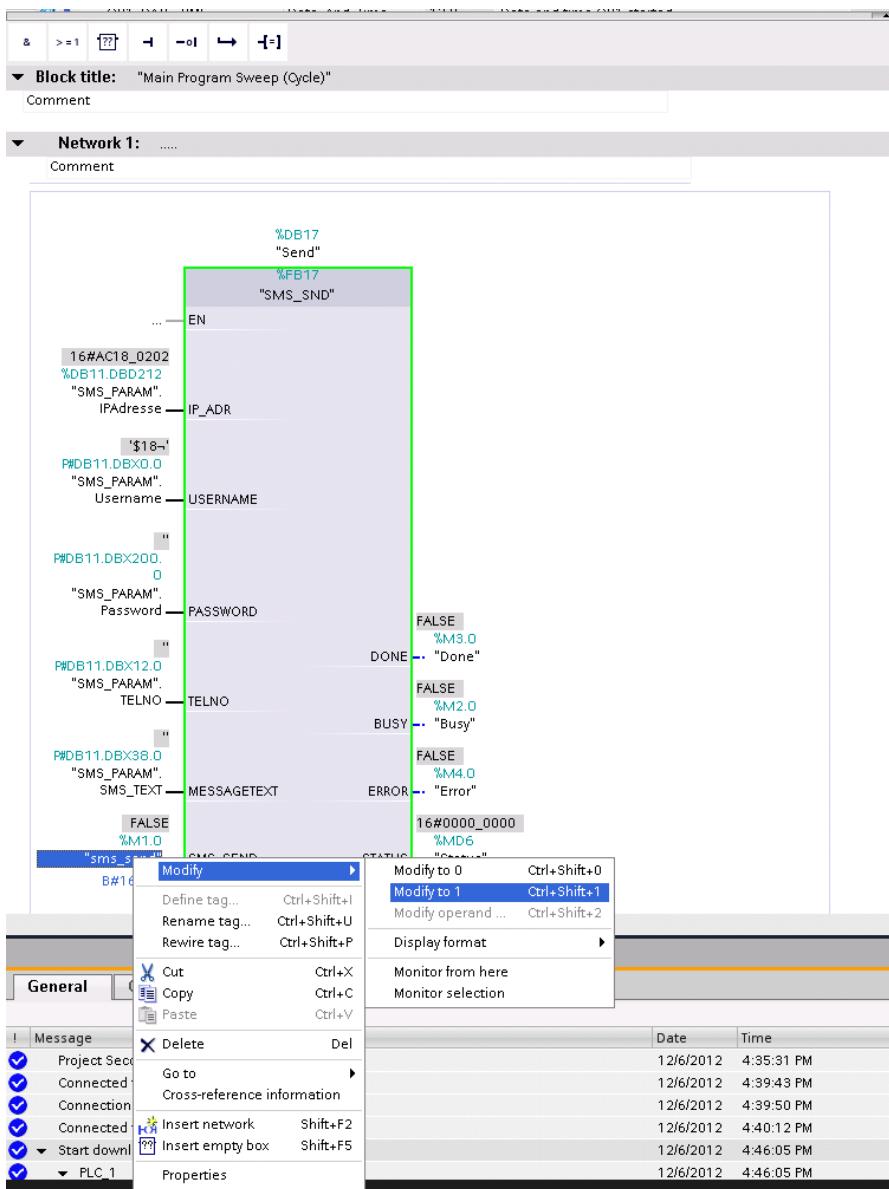
# Appendix B, Enable Mail Relay, <u>Own</u> GateManager

Under Server Relay Target Names, add the following entry:

   MAIL=x.x.x.x:25

"MAIL" is the symbolic name that is used in the SiteManager (See screen-shot in section **2.1.2**

"x.x.x.x" denotes the IP address of your mail server or mail relay. This is typically the same as the one configured under **Server → Config → Mail Settings**.

"25" is the default SMTP port of the relay server. Note that the GateManager will not support relaying of encrypted mails or relaying to mail servers that require login credentials.
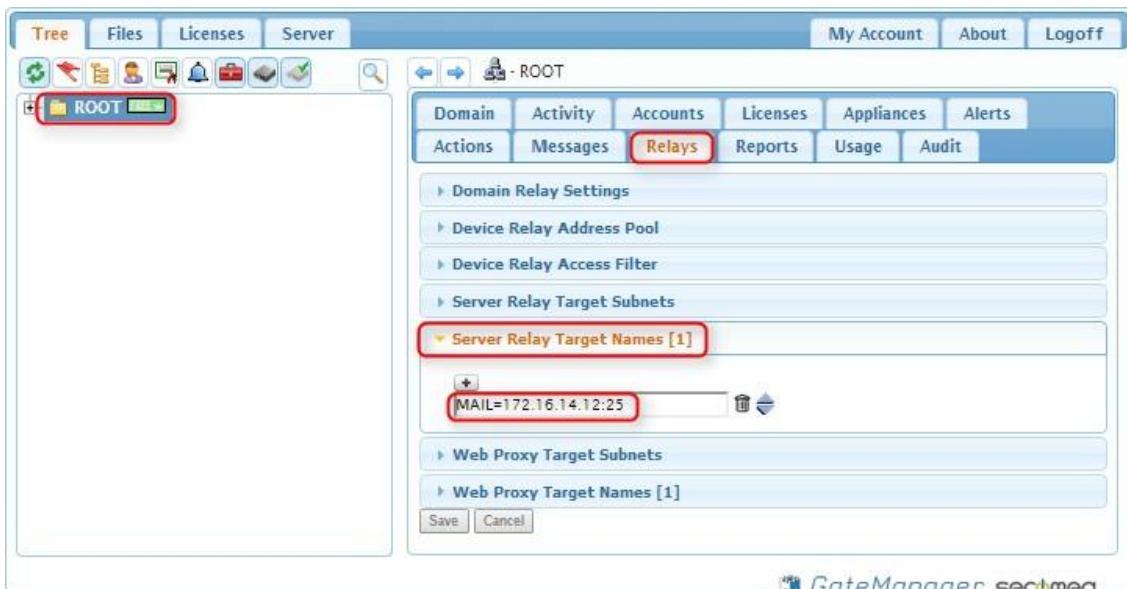
In this example the corporate server 172.16.14.12 is Mail Relay server for this GateManager. The mail server must be configured to accept relaying of mail from the GateManager.

If you want to use the integrated SMTP server of the GateManager you can enter a local host IP:

MAIL=127.0.0.1:25

Appendix C. Configuring devices to use SiteManager as route

For a device to use the SiteManager as route based on the Routing agent, the device needs to know that the SiteManager is the gateway to the other network.

Method 1: Assign SiteManager as default Gateway

If the SiteManager is configured as default gateway for the device, the device will automatically use the SiteManager as route. If the device does not already use another device as gateway, you may safely change it to the local IP address of the SiteManager. This would typically only be the case for devices on an isolated DEV network.

If the device supports DHCP, you can enable DHCP on the DEV port of the SiteManager and the device will automatically get the SiteManager's DEV port as default gateway. If you are concerned that the IP address may change, you can enter the SiteManager menu DEV > DHCP > Leases and fix the MAC address of the device to always have a specific IP address assigned.

Method 2: Configure a local static route

If the device is on the Uplink side of the SiteManager, or does not allow changing its current default gateway, you must configure a static route on the device. Refer to the documentation of your device for instructions.

If the device is a Windows computer, you can open a command prompt and enter a static route through the "route" command.

Press "Windows key + R" or go to the start menu and type "cmd" and press ENTER.

Use the "route" command to add a static route. See example below:
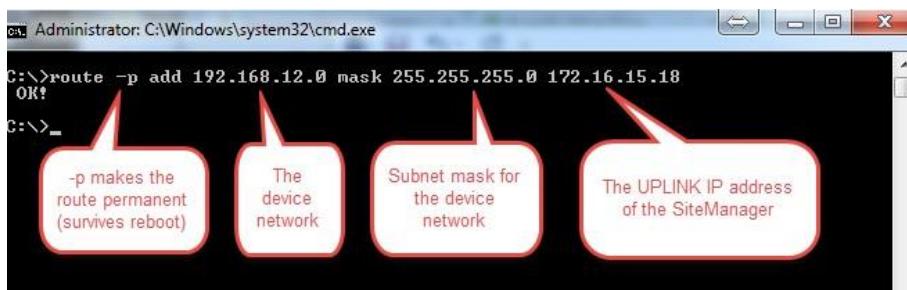
Then configure your software to access the IP address of the devices directly. Ie. 192.168.12.4 and 192.168.12.5.

Method 3: Inserting a route into the corporate firewall

When the SCADA PC needs access to an IP address not being in the same subnet as the SCADA PC, it will request the route from its default router. This router is typically the corporate firewall.

You should therefore insert a static route rule in the firewall that routes request to IP addresses of equipment in the device network to the uplink address of the SiteManager.

With the example above in mind, the firewall should be configured to forward requests for IP addresses in subnet 192.168.12.0 to the "router" 172.16.15.18.

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