



PNPSCADA



COURSE 104

TECHNICIAN ROLE:
*Installing Active GPRS Modems on
Plug and Play Scada*



The NEXT Generation AMR

Gives you the power to configure your own
AMR, via an easy to use Web interface



Multi-Vendor Modem Support

Previous Course Requirements

- 102 Technician - Installation of meters

Once you are done with this Course, you should be able to:

- Configure a meter to read on Plug and Play Scada through an Active GPRS Modem
- Configure the SmarTee, Kocos 1140, Maestro and Enfora Active GPRS Modems to connect to Plug and Play Scada
- Do basic troubleshooting on Active GPRS Modems.



MODULE 1: Active GPRS Modems in General





MODULE 1:

Active GPRS Modems in General

- Active GPRS Modems are cell phone modems that connect out to the Server over TCP/IP, typically over the normal Internet.
- The alternative is GPRS Modems working over an APN (Private Network), where the Server connects to the modems over TCP/IP.
- Advantages of using Active GPRS Modems rather than Passive (APN) GPRS Modems include:
 - Don't have to pay premium for APN
 - Better support (everybody uses Internet)
 - Not limited to one network or country
 - For Intelligent Active GPRS Modems, better use of unreliable links
- Don't have to use Router at server: half of the data sent over wireless, faster ping times and no wireless bottleneck at server.
- Intelligent Active GPRS Modems can identify themselves over the TCP connection to the server, whereas Generic Active GPRS Modems cannot.
- While Plug and Play Scada only currently supports 3 Intelligent Active GPRS Modems (TruTeq, Kocos A1140 and TC65), more GPRS modems can be configured as Generic Active GPRS Modems (2 examples being the Enfora and the Maestro).
- The TruTeq SmarTee modem slots into the Elster A1700, and the Kocos A1140 modem slots into the Elster A1140, and can get power from the serial port on the Elster A1140 and Elster AS230 Serial comms module. Both can fit under their meter's cover, giving additional protection against theft and SIM card theft in particular. Both are supplied by Elster.



MODULE 1: Active GPRS Modems in General

(continued)

- The Siemens/Cinterion TC65 modem runs a program supplied by SDG Technologies, which protects the SIM card by putting on a secret PIN. Any modem with a TC45 or TC65 cell phone engine is compatible.
- The Maestro modem is supplied by Trinity Telecoms in South Africa, and runs a program called SmartPack – written on the OpenAT platform – which makes it possible to connect and reconnect to a remote IP address. This is the second cheapest option of the 5 above modem types.
- The Enfora modem is currently the cheapest option that has been tested successfully with Plug and Play Scada.

NOTES:



MODULE 1: Active GPRS Modems in General

EXERCISE

Assignment:

Taking into account your site or a specific site that you may have in mind (take a real example if possible), which Active GPRS Modem would you use?

Place:

Which Active GPRS Modem? _____

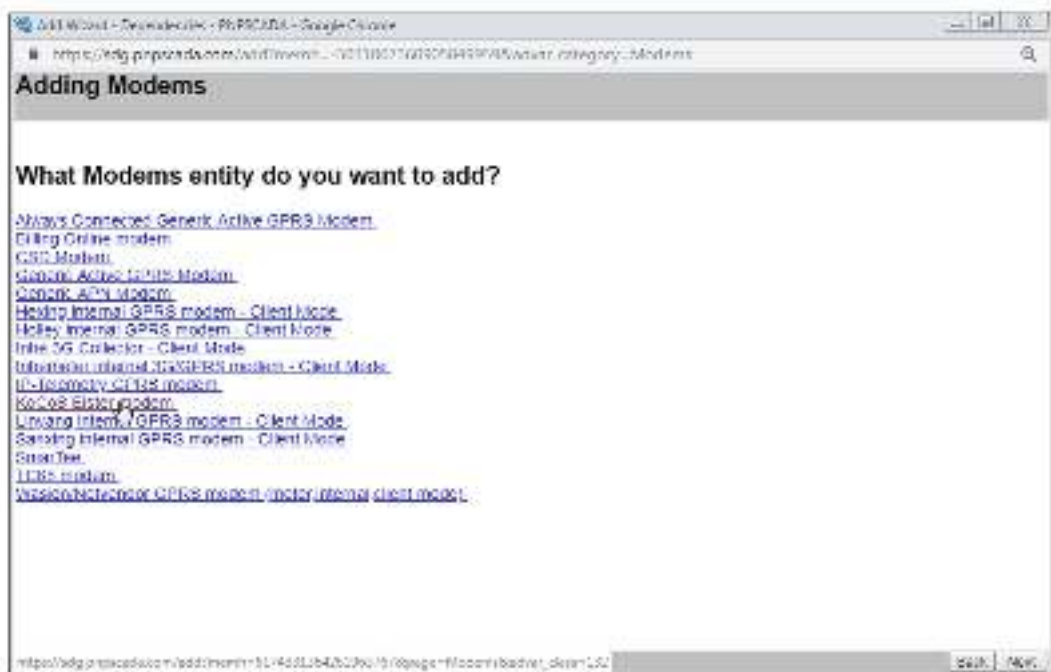
Motivate Why:

Call the Lecturer if you have any questions, and when you're done.



MODULE 1: Adding an Intelligent Active GPRS Modem to Plug and Play Scada

Step 1: Plug and Play Scada setup



MODULE 1:

Adding an Active GPRS Modem to Plug and Play Scada

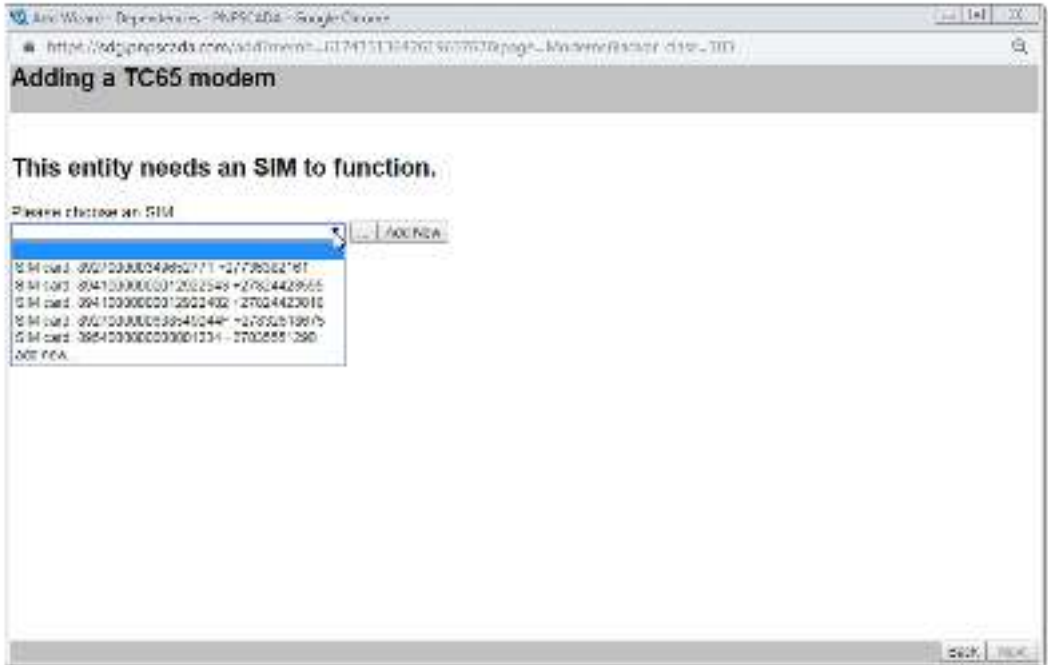
Step 1: Plug and Play Scada setup

- The Siemens/Cinterion TC65 modem runs a program supplied by SDG Technologies, which protects the SIM card by putting on a secret PIN. Any modem with a TC45 or TC65 cell phone engine is compatible.
- The Maestro modem is supplied by Trinity Telecoms in South Africa, and runs a program called SmartPack – written on the OpenAT platform – which makes it possible to connect and reconnect to a remote IP address. This is the second cheapest option of the 5 above modem types.
- The Enfora modem is currently the cheapest option that has been tested successfully with Plug and Play Scada.



MODULE 1: Adding an Intelligent Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem Setup - A. The TC65





MODULE 1: Adding an Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem setup - A. The TC65

- For any Modem with the TC45 or TC65 based Cell phone engine from Siemens or Cinterion to connect to Plug and Play Scada, it needs to be programmed with a Java program from SDG Technologies.
- Email SDG Technologies support at: support@pnpscada.com if you need to program your TC65 or TC45 modem. State the modem's telephone number, and leave it powered up.

NOTES:



MODULE 1: Adding an Intelligent Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem Setup - B. The TruTeeq SmarTee/SmarToo/Cruiser modem

Acid Wizard - TruTeeq Modem - PNPSCADA - Google Chrome

https://sdg.pnpscada.com/addSmarTee?memih=5032758892284479754&advvar_diddep=dome&replacid...

Add a TruTeeq SmarTee/SmarToo/Cruiser modem

User defined modem name:

You need at least version V117x of the Firmware for this to work. Check the firmware version with command #03
WARNING! Trying to configure these settings on an older Firmware version could cause the modem to become inaccessable.

To set up a TruTeeq SmarTee, SmarToo or Cruiser modem to work with pnpscada.com, you need to set up the following commands on the modem in the [TruTalk command language](#):

```
#150 0
#18 1 117 1 00:00:00:142:0:150 ""
#154 156 22.139.148
#157 7627
#158 internet
#159
#160
#161 1440 3 1
#150 1
#15 116 1 1 117 1 00:01:00
#256
```

This tells the modem to automatically connect to the pnpscada.com server (196.22.139.148) on port 7627. If you use a different APN for Internet on your network, specify that with #158. If you need a username and password, specify those with #159 and #160.

(To go into command mode while in a CSD call with the modem, enter ---)
(To get the SIM card number while in command mode, enter #64 "AT+CCID")

Back Finish



MODULE 1:

Adding an Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem setup - B. The TruTeq SmarTee/SmarToo/Cruiser modem

- You need at least version V117x of the Firmware for this modem to work. You can check the firmware version with command ?03
- To get into command mode when connected to the Serial Port, enter AT\$TT
- To upgrade the firmware, use the latest Yatpro software from TruTeq and upload the correct firmware with the appropriate option in the software (select !serial). You need your computer to be connected to the modem via a serial cable to do this.
- To get into command mode when in a CSD call with the mode, enter ---
- To connect directly to the SmarTee modem via a serial cable, you'll need a special serial cable, or a cable with a 25 pin male serial cable connector on one side (to plug it in where the meter normally goes)
- The SmarTee can also be set to receive AT commands via SMS, but the instructions for that is beyond the scope of this document.
- You need to make sure what your server IP is (!154), and what the proper APN (!158) and username (!159) & password (!160) is for your cell phone network to log in to Internet. Substitute those values below if they don't match your particular configuration.

MODULE 1:

Adding an Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem setup - B. The TruTeq SmarTee/SmarToo/Cruiser modem (continued)

- The commands you need are:

```
!150 0
!18 1 !17 1 00:02:00 !42 0 150 ""
!154 196.22.139.148
!157 7627
!158 internet
!159
!160
!161 1440 2 1
!150 1
!15 !16 1 1 !17 1 00:01:00
!256
```

- To get the SIM card number while in command mode, enter:
!64 "AT+CCID"
- All modems of this type connect on TCP port 7627. Plug and Play Scada will identify the particular modem by the SIM card number, which it will retrieve from the modem over the TCP/IP connection.
- If the modem connects to the wrong server, it should automatically set the IP to the right server.



MODULE 3: Adding an Generic Active GPRS Modem to Plug and Play Scada

Step 1: Plug and Play Scada setup

Add Wizard - KoCoS Modem - PNPSCADA - Google Chrome

https://sdg.pnpscada.com/addKoCoS?memh=57974462682982783638advar_dididop-donc&replacold=...

Add a KoCoS Elster A1140 modem

User defined modem name:

You need at least version 2.1 of the Firmware for this to work. (2.1 and 2.10 is equivalent)
To confirm the firmware version, SMS user to the modem, it should reply with the firmware version.
If you get no response, the modem firmware might be very old. SMS user to the modem.
To program via SMS to connect to Plug and Play Scada for RS232, these are 4 SMS necessary at this stage:

```

SMS user /api/Internet
GET /api/user/171296.22.129.140 /api/232? /api/2 /api/200 /api/200 /api/200 /api/200
SMS

```

The first one sets up GPRS and the APN.
The second one sets up TCP application 1 to connect somewhere on TCP regarding SIM card number on contact.
The third one saves the settings.
The fourth one resets the modem.

To program via SMS to connect to Plug and Play Scada for RS485:

```

SMS user /api/Internet
GET /api/user/171296.22.129.140 /api/485? /api/2 /api/200 /api/200 /api/200 /api/200
SMS

```

To program KoCoS AS279 Elite via SMS to connect to Plug and Play Scada for RS232 Internal Port (for the host modem):

```

GPRS user /api/Internet
GET /api/user/171296.22.129.140 /api/232? /api/2 /api/200 /api/200 /api/200 /api/200
SMS

```

... and ...

To program KoCoS AS279 Elite via SMS to connect to Plug and Play Scada for RS232 External Port: add a Generic Active GPRS Modem (no for the other modem):

```

SMS user /api/Internet/171296.22.129.140 /api/232? /api/2 /api/200 /api/200 /api/200 /api/200 /api/200 /api/200
SMS

```

If it doesn't work, send SMS or user to the modem.
It will reply with the current settings for these commands.
Make sure the settings are as you set it above, especially that SMS returns user and not user.
To get the SIM card number, send SMS to the modem.
If you want to use TCP Bridge with PMU ver3, set the modem to even Parity via SMS/232/5000
If you are connecting your KoCoS modem to a Elster A31000-485: sms/user/171296.22.129.140 or 232 sms/user/171296.22.129.140

Back Forward



MODULE 3: Adding an Generic Active GPRS Modem to Plug and Play Scada

Step 1: Plug and Play Scada setup

Add Wizard - KoCoS Modem - PNPSCADA - Google Chrome

https://sdg.pnpscada.com/addKoCoS?memh=57974462682982783638advar_dididop-donc&replacold=...

Add a KoCoS Elster A1140 modem

User defined modem name:

You need at least version 2.1 of the Firmware for this to work. (2.1 and 2.10 is equivalent)
To confirm the firmware version, SMS user to the modem, it should reply with the firmware version.
If you get no response, the modem firmware might be very old. SMS user to the modem.
To program via SMS to connect to Plug and Play Scada for RS232, these are 4 SMS necessary at this stage:

```

SMS user /api/Internet
GET /api/user/171296.22.129.140 /api/232? /api/2 /api/200 /api/200 /api/200 /api/200
SMS
SMS

```

The first one sets up GPRS and the APN.
The second one sets up TCP application 1 to connect somewhere on TCP regarding SIM card number on contact.
The third one saves the settings.
The fourth one reboots the modem.

To program via SMS to connect to Plug and Play Scada for RS485:

```

SMS user /api/Internet
GET /api/user/171296.22.129.140 /api/485? /api/2 /api/200 /api/200 /api/200 /api/200
SMS
SMS

```

To program KoCoS AS279 Elite via SMS to connect to Plug and Play Scada for RS232 Internal Port (for the host modem):

```

GPRS user /api/Internet
GET /api/user/171296.22.129.140 /api/232? /api/2 /api/200 /api/200 /api/200 /api/200
SMS
SMS

```

To program KoCoS AS279 Elite via SMS to connect to Plug and Play Scada for RS232 External Port: add a Generic Active GPRS Modem (no for the other modem)

```

SMS user /api/Internet
GET /api/user/171296.22.129.140 /api/232? /api/2 /api/200 /api/200 /api/200 /api/200 /api/200 /api/200
SMS
SMS

```

If it doesn't work, send SMS or user to the modem.
It will reply with the current settings for these commands.
Make sure the settings are as you set it above, especially that SMS returns user and not user.
To get the SIM card number, send SMS to the modem.
If you want to use TCP Bridge with PMU ver3, set the modem to even Parity via SMS/232/5000
If you are connecting your KoCoS modem to a Elster A31000-485: sms /api/232/5000, or 232 sms /api/232/5000

Back Forward



MODULE 1: Adding an Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem setup - C. The KoCoS Elster A1140 modem

- The special KoCoS modem that fits into the Elster A1140 meter plugs straight into the Meter for power and serial communication, so it is not easy to connect to your computer via a serial cable.
- The best way to program this modem is via SMS commands:
 - Command for checking the firmware version:
 - ver
 - Some older versions respond to:
 - ver?
- The commands for setting up the modem are:
 - GPRS /e:1 /apn:internet
 - NET /i:1 /m:1 /h:41.134.117.162 /p:56267 /sid:2 /ito:300 /rto:60 /e:0
 - NET /i:1 /e:1
 - SAVE
 - RST
- Make sure you pass the correct APN and your Server IP in the appropriate places.
- To check your setup, SMS the following commands to the modem and check that your settings was correctly set:
 - GPRS
 - NET
 - Check especially that NET1 returns /e:1 and not /e:0



MODULE 3: Adding an Generic Active GPRS Modem to Plug and Play Scada

Step 1: Plug and Play Scada setup

Add Wizard - Generic Active GPRS Modem - PNPSCADA - Google Chrome

https://sdg.pnpscada.com/addMaestro?memh=6525322996109682813&actvar_diddep=dome&replaceId=...

Add a Generic Active GPRS modem

A Generic Active GPRS modem is any GPRS modem that can be set to automatically connect to a remote port on a remote IP address.

With most Generic Active GPRS modems, there is no mechanism to find out the modem's identity, except by the TCP port number it connects to on the server, and possibly the equipment that is connected to it.

Example modems include but is not limited to:
[Maestro](#) [Enfora](#) [BQL](#)

Click on the modem type above to see help on how to set it up to work with Plug and Play Scada.

User defined modem name:

Port: (incoming tcp port, from 13000 up)

Back Finish



MODULE 3:

Adding an Generic Active GPRS Modem to Plug and Play Scada

Step 1: Plug and Play Scada setup

- Log in to Plug and Play Scada.
- Add a Modem entity:
- Choose Generic Active GPRS Modem.
- Select the SIM card to use, or Push the Add New button to add a new SIM card if it has not been added yet, and press Next.
- The Generic Active GPRS Modems are identified by the port number they connect to on the server.
- Enter a unique Port number for this Modem (the same port you'll set up on the modem itself).
- Enter a human readable Name that you can use later to identify the modem.
- Push the Finish Button to add the modem.
- As long as a GPRS modem can be set up to provide the following, it can be added on Plug and Play Scada as a Generic Active GPRS Modem:
 - an automatically connected TCP connection to a configured remote IP - at a configured remote TCP/IP Port.
 - TCP Link maintenance: re-establishing the TCP connection automatically in case the link goes down.
 - an exact pass through connection from its Serial Port to the TCP connection. This means that all it sends and receives on the TCP connection must be directly received and sent through the Serial Port.



MODULE 2 & 3: Intelligent Active GPRS Modems

EXERCISE

Assignment:

Set up the Active GPRS Modem on your desk to connect to Plug and Play Scada, and connect your meter to it.

Setup both Entities in Plug and Play Scada, and read in the Phasor Graph successfully.

Call the Lecturer if you have any questions, and when you're done, tell him your phasor's timestamp and the value of the red voltage, if any.



PNPSCADA

MODULE 3: Adding an Generic Active GPRS Modem to Plug and Play Scada

Step 2: Active GPRS Modem setup
A. The Fargo Maestro modem

GET PICTURE