



# Axiome Basic

## Installation & Use

doc\_454\_d\_en.odt

### Table of Contents

<b><u>AXIOME BASIC &amp; AXIOME EDITOR DOWNLOAD.....</u></b>	<b><u>2</u></b>
<b><u>AXIOME BASIC AND AXIOME EDITOR INSTALLATION.....</u></b>	<b><u>3</u></b>
Installing Axiome Basic.....	3
USB converter drivers.....	3
<b><u>AXIOME EDITOR USE.....</u></b>	<b><u>5</u></b>
PARAMETERS.....	5
"General" tab.....	5
"GSM timing" tab.....	5
"Acquisitions" tab.....	6
Slow/fast Sequence Configuration.....	6
XML FILE.....	6
<b><u>AXIOME BASIC USE.....</u></b>	<b><u>7</u></b>
FIRST USE.....	7
FIELDS DESCRIPTION.....	8
Clock.....	8
Acquisitions.....	9
GSM.....	9
Measurement memory (flash).....	9
Log.....	9
Set Time to PC time.....	10
Quick Sync.....	10
Set next GSM on time.....	10
GSM enable / GSM disable.....	10
GSM on now !.....	10
SMS now !.....	10
GSM off now !.....	10
GSM off +15min.....	10
Upload EEPROM configuration.....	10
Enable acquisitions/Disable acquisitions.....	10
Force Slow mode/Force Fast mode.....	10
Set next Acquisition time.....	10
Digital outputs.....	10
Clear Flash.....	11
Download Flash.....	11
Start Acquisition NOW.....	11
Get Health.....	11
DATA DISPLAY, AFFICHEXML.....	12
USING AXIOME BASIC IN GSM MODE.....	13
Inside the TRMC.....	13
Inside axiome basic.....	13
<b><u>CONTACT INFORMATION.....</u></b>	<b><u>15</u></b>



## *Axiome Basic & Axiome Editor download*

### **Axiome Basic & Axiome Editor presentation**

Axiome Basic is communication software for the TRMC, either in GSM DATA mode or through a wire link (USB, RS-232). It allows setup of some of the TRMC parameters (clock,...). It offers data download capabilities and configuration programming inside TRMC's memory.

Axiome Editor doesn't communicate with the TRMC. This program is useful to create TRMC's configuration files. It is a simple interface to create configuration. Axiome Editor creates an XML setup file which can be read by Axiome Basic.

Axiome\_editor\_trmc5.exe is a special version of the Axiome Editor software for the TRMC-5

### **Where to find Axiome Basic**

Go on the Internet page

<http://www.tetraedre.com/download.php>

... and download **axiome\_basic\_setup.exe**. This is a Windows 2000, XP,.. installation program for Axiome Basic and Axiome editor. Example files, and USB drivers are also installed on the PC.

Store the program on your computer. Run it.



## *Axiome Basic and Axiome Editor installation*

### Installing Axiome Basic

To install Axiome Basic and Axiome Editor, double-click on `axiome_basic_setup.exe`. The program will invite you to install the software in the directory `c:\tetraedre`. We strongly suggest you to keep this option unchanged.

The installation program places icons on your screen. It has also added a "Tetraedre" entry into the "Programs" menu. To start Axiome Basic, double-click on its icon.

### USB converter drivers

Some customers are using the TRMC USB converter cable. This device may require the installation of a specific driver. These drivers are copied with the installation program.

When you connect the USB cable to the PC, Windows will ask you which driver to use. Specify a specific location named

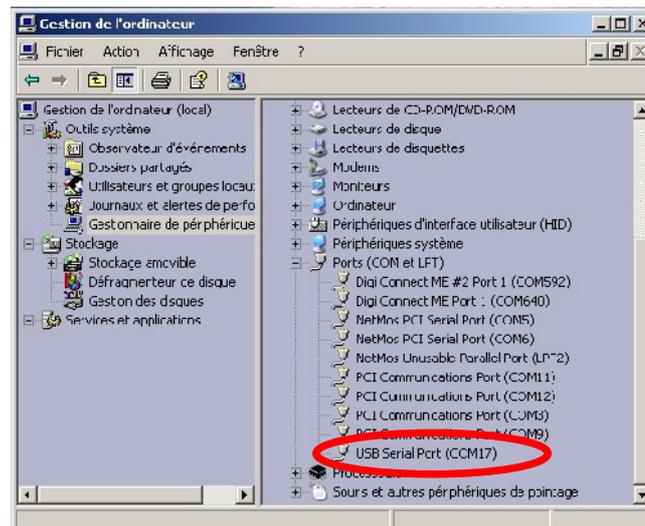
```
c:\tetraedre\install_drivers\USB_drivers
```

See also the following image





When the installation is over, a new COM port has been created. To verify this, go into the **Control Panel => Administration tools => Computer Management**, then choose **Peripherals manager**. At this step, you should see the new COM port (see picture below)



Write down the COM port created (COM17 in this example). This number will be useful later when you try to communicate with the TRMC.



## *Axiome Editor Use*

**Note:** The TRMC devices are only briefly presented here. For a more detailed description, please take a look at the firmware documentation (doc\_455 or other).

**Note:** Axiome Editor allows you to create configuration file. Anyway the capabilities of Axiome Editor are limited and it is not able to make too complicated configurations. For special configuration, it is possible to edit the configuration file with the notepad or with a program like UltraEdit.

**Note:** It is possible to load a configuration file inside Axiome Editor. Anyway, if this configuration is too complex, Axiome Editor might not understand it completely and might truncate it.

### Parameters

---

Start Axiome Editor TRMC5 by double-clicking on its icon

#### **"COM ports" tab**

- In the first field, write the number of your USB (or RS-232) COM port ("COM6" or "\\.\COM17" in our example)
- In the second field, specify the COM port of your modem. Depending on your application (GPRS,...) you might not need this

#### **"Directories" tab**

You can choose the path where the files will be stored. We recommend you to keep the suggested value.

#### **"Stations" tab**

On this page, you can define the parameters of one or several TRMC devices (or stations). In the beginning, add only one TRMC.

To add a new TRMC, click on "Add a new station".

#### **"General" tab**

Enter here, the serial number of the TRMC, its phone number (used in GSM data mode), the PIN code of its SIM card. You might also add a small description of the device (for example: "Test device Geneva")

#### **"GSM timing" tab**

The phone number of the people receiving SMS can be entered

In GSM Call mode (see firmware documentation), you need also to specify the phone number the TRMC has to dial. This option is rarely used.

TRMC timing parameters of the TRMC and SMS message text can also be entered. For a detailed description of the meaning of these parameters, please read the firmware documentation.



---

## "Acquisitions" tab

The time interval between two measurement, either in "slow" or "fast" mode is given (see firmware documentation).

To choose the measured channels in slow mode, click on "Slow sequence configuration". Similar thing for "fast" mode and Health sequence.

## Slow/fast Sequence Configuration

In these windows, you can choose the channels that you want to measure. Simply check the corresponding box.

When a channel is selected, you can usually choose to configure a threshold on the measured value. In the tab "Actions", you can choose the actions that will be performed in case of threshold over-/underflow.

Please note again that Axiome Editor is a simple software and much more complex acquisition sequences can be defined by editing the XML setup file.

---

## XML file

Once that all parameters have been selected, simply save the file (see menu). We suggest you to store it inside the directory : c:\tetraedre\axiome\_basic

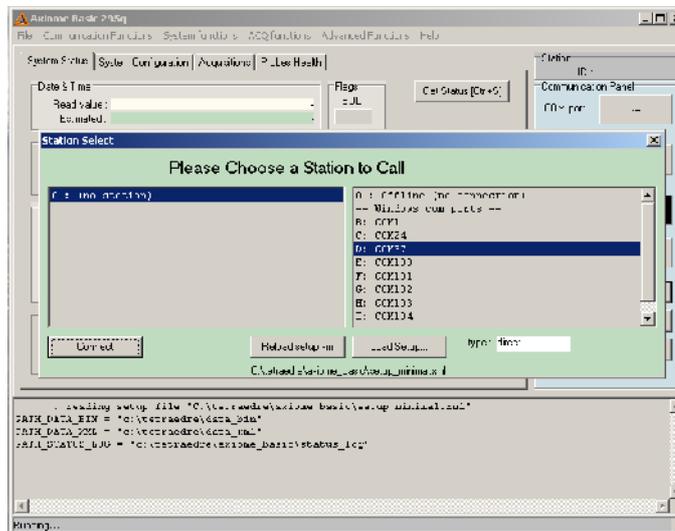
This file will be used by Axiome Basic to be programmed inside the TRMC



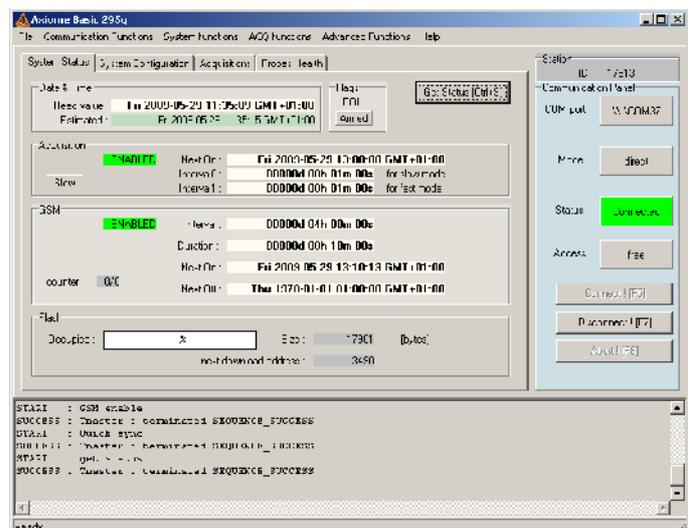
## Axiome Basic use

### First use

- Start Axiome Basic by double-clicking on its icon
- Click on "Load Setup" to choose a configuration file
- Try to load the file *setup\_minimal.xml* in the directory *c:\tetraedre\axiome\_basic* (or the file that you just created with Axiome Editor)



- Choose the COM port that corresponds to your USB (or RS-232) converter
- Click on "**Connect**".
- A green box "Connected" appears on the right side of the window. It indicates that the COM have been opened correctly (it does not mean that it has been able to talk with the TRMC)
- Switch the TRMC on if necessary
- Click on "**GetStatus**"
- The TRMC has answered and Axiome Basic displays now several information about the state of the TRMC





## Fields description

*note : Read the documentation describing the firmware of the TRMC (for example doc\_455) for a detailed description of all these parameters.*

### "System Status" tab

The text "[Ctrl+S]" is written beside the "Get Status" button. This means that there is a keyboard shortcut (Control key + "S" key) that makes a "Get Status". Some other buttons have also shortcuts.

### Clock



### Acquisitions

Acquisition enabled or disabled status

Current TRMC mode

Next On: Fri 2009-05-29 13:00:00 GMT+01:00

Interval0: 0000d 00h 01m 00s for slow mode

Interval1: 0000d 00h 01m 00s for fast mode

Date & time (local winter time) of the next planned acquisition

time interval between two measurement cycles

To have a detailed description of these parameters, please read the firmware documentation (doc\_455 or applicable)

### GSM

GSM enabled or disabled status

Timing parameters of the GSM

Interval: 0000d 04h 00m 00s

Duration: 0000d 00h 10m 00s

Next On: Fri 2009-05-29 13:10:13 GMT+01:00

Next Off: Thu 1970-01-01 01:00:00 GMT+01:00

Date & Time (local winter time) of the next planned communication

Date & Time (local winter time) to switch off the GSM

### Measurement memory (flash)

memory occupation level

memory occupation pointer

Occupied: 1%

Size: 17901 [bytes]

next download address: 3490

pointer on the last value that has been transmitted

### Log

When you click on Axiome Basic buttons, this starts to send orders to the TRMC. When the order has been received, the message "terminated SEQUENCE\_SUCCESS" appears in the bottom of the window.

If the order could not be transmitted correctly to the TRMC, Axiome Basic retries several times and after several seconds, an error message appears ("Timeout", "SEQUENCE\_ERROR")

Error during transmission of the order

Success during transmission of the order

```

START : get status
SUCCESS : Inaster : terminated SEQUENCE_SUCCESS
START : get status
ERROR : Timeout (nscp_socket)
ERROR : Inaster : terminated SEQUENCE_ERROR
START : get status
SUCCESS : Inaster : terminated SEQUENCE_SUCCESS
  
```

In some cases, the order is executed immediately by the TRMC (clock settings, GetStatus,...) while some other orders might take longer to execute.

For example, when clicking on "GSM on now!", Axiome Basic receives a "SUCCESS" immediately (the TRMC tells that it has received the order correctly), but the GSM will not be ready immediately (it could take several tens of seconds).



## ***System Configuration" Tab***

### **Set Time to PC time**

By clicking on this button, Axiome Basic will set the TRMC internal clock to the value of the PC clock. Usually you should use the "Quick Sync" button described hereafter instead of "Set time to PC time"

### **Quick Sync**

With this order, Axiome Basic sets GSM\_NEXT\_ON (date & time of the next GSM communication), then sets ACQ\_NEXT\_ON (date & time of the next acquisition sequence) and then sets the TIME (the TRMC clock).

Axiome Basic is using the PC clock as a reference. ACQ\_NEXT\_ON is set to the next quarter of hour. While GSM\_NEXT\_ON is set right after the next hour. To avoid that several TRMC might make simultaneous GPRS connection and overload the server (applicable only in GPRS mode), Axiome Basic makes a calculation based on the TRMC serial number to get GSM\_NEXT\_ON.

### **Set next GSM on time**

Sets GSM\_NEXT\_ON to the desired date & time

### **GSM enable / GSM disable**

Enable or disable the use of the GSM. Usually the GSM must be enabled

### **GSM on now !**

Switch the GSM on now. In some cases (GPRS,...) this also starts automatically a communication process (except if the GSM is already on).

### **SMS now !**

Sends an SMS now. Very useful to test GSM communication.

### **GSM off now !**

Force GSM power down now.

### **GSM off +15min**

Postpone the GSM power down of 15 minutes. Very useful when in GSM connection to extend GSM power on duration.

### **Upload EEPROM configuration**

This important button will transfer the content of the XML configuration file inside the memory of the TRMC.

If you modify the configuration file (manually or with the Axiome Editor program), you have to reload the file by making "Disconnect", "Connect", "Load setup" (or reload). After this, you need to click again on **Upload EEPROM configuration** to transmit the data to the TRMC.

## ***"Acquisitions" tab***

### **Enable acquisitions/Disable acquisitions**

Enable or disable automated acquisitions (sequence slow or fast). Usually acquisitions must be enabled.

### **Force Slow mode/Force Fast mode**

Allow to specify the current mode of the TRMC. Useful to test configurations

### **Set next Acquisition time**

Configures ACQ\_NEXT\_ON to the specified date and time

### **Digital outputs**

Used for TRMC with digital outputs (TRMC-1, TRMC-5, TRMC-19,...).



Changes the state of the outputs individually. "Keep" indicates not to change the output. "Force 1" and "Force 0" indicate to change the output accordingly. To apply these changes, click on "Update".

## Clear Flash

Clear the whole measurement memory (flash). The configuration memory is not affected

## Download Flash

Download the datalogger measurement memory to the PC.

"Range" and "Up to the end" download the memory from a specific add to either respectively a defined end address or up to the end of the used memory.

"Download All" download the whole used memory from address 0 to its end.

"Incremental" downloads the new measurement stored in the memory. The start address is NEXT\_DOWNLOAD\_ADDRESS. The download starts from this address up to the end of the used memory. Once the download is finished, the value of NEXT\_DOWNLOAD\_ADDRESS is updated to the value of the end of used memory. This means that during future download, only the newly stored measurement will be downloaded.

The downloaded files are stored in two types of files. ".bin" are stored in the configured bin directory (usually c:\tetraedre\data\_bin). From this .bin file is a .xml file generated. This file is stored in the configured directory (usually c:\tetraedre\data\_xml).

More information are available at the next chapter.

## Start Acquisition NOW

Starts a new acquisition sequence. If the TRMC is in slow mode, the sequence #0 will be started otherwise the sequence #1 is started (fast mode). Note that measurement made during this sequence are not automatically downloaded on the PC. You need to download them with "Download flash" to get them.

## ***Probes Health" tab***

### Get Health

This button starts acquisition sequence #2. Axiome Basic waits for the end of the sequence and downloads the new measurement. If the acquisition sequence is very long, Axiome Basic might generate a timeout before the end of the sequence.



## Data display, AfficheXML

Once the data have been downloaded on the PC, Axiome Basic will open a window to display these data.

This window is named **AfficheXML**. This program can also be started in a stand-alone mode. In this case, you need to open the desired XML result file. This is often useful for off-line data analysis.

**Note:** AfficheXML shows the data in a table format. This mode is very simple and might not be adapted for all the measurement (for example, complex electricity meter results). Tetraedre can provide custom specific data display.

Timestamp	Timestamp	T [°C]	F1 [mV]	F2 [mV]	F3 [mV]	F4 [mV]	Vbat [V]	I161 [mA]	I162 [mA]	V169 [V]	V170 [V]	C166 [#]	C17 [#]	P168 [#]	P171 [#]	C17
Mon 2009-05-25 12:29:09 GMT	1243250949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 12:29:13 GMT	1243250953	-	-	-	-	-	3.74	-	-	-	-	-	-	-	-	-
Thu 1970-01-01 01:00:00 GMT	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thu 1970-01-01 01:00:00 GMT	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 12:50:00 GMT	1243252200	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 12:50:14 GMT	1243252214	-	-	-	-	-	3.79	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 12:50:30 GMT	1243252230	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 12:51:53 GMT	1243252313	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 14:00:00 GMT	1243256400	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 14:15:00 GMT	1243257300	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 14:30:00 GMT	1243258200	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 14:45:00 GMT	1243259100	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 15:00:00 GMT	1243260000	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 15:15:00 GMT	1243260900	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-
Mon 2009-05-25 15:30:00 GMT	1243261800	-	-	-	-	-	3.78	-	-	-	-	-	-	-	-	-

The first column indicates the date and time of the measurement in ISO8601 format. The second column is the same information, in UNIX timestamp (number of seconds since January 1st 1970 GMT). The following columns contain the values made with the different channels.

To transfer these data to Excel, right-click on the table. "Save tabular" allows to store the table inside a file while "Copy to clipboard" allows easy copy/paste to Excel.

## Fluorometer measurement conversion

Affiche XML contains special functions to convert the raw data coming from FL-24 and FL-30 fluorimeters.

Once the table window is open with the raw data, choose "convert to ppb" in the "tools" menu. This opens a second window. Choose the fluorometer calibration file with the button "Load Calibration File...".

By clicking on "CONVERT !", the raw values (mV) are converted into concentration. The result of this conversion can also be transferred to Excel.



## Using Axiome Basic in GSM mode

The user uses Axiome Basic, with USB or RS-232 cable to configure and test the TRMC device. But it is also possible to use Axiome Basic for GSM DATA connection (CSD mode, **NOT** GPRS).

### GSM parameters

#### Inside the TRMC...

In order to achieve a GSM DATA connection, the TRMC must be configured to do so. The GSM must also be "on", with the right PIN code,...

Please note that for newcomers to GSM DATA mode, the most difficult task is to get the right SIM card subscription that makes GSM DATA (CSD) connection. Usually operators sell SIM card for GPRS and tell this is data mode. But GPRS is NOT DATA mode. DATA mode requires a special configuration.

#### Inside axiome basic...

In order to achieve a GSM DATA connection, Axiome Basic needs to know on which COM port is the modem connected. This must be specified in the XML configuration file like shown hereafter:

```
<COMPORTS>
  <COMPORT port="COM3" rate="9600" type="modem" description="analog modem"/>
</COMPORTS>
```

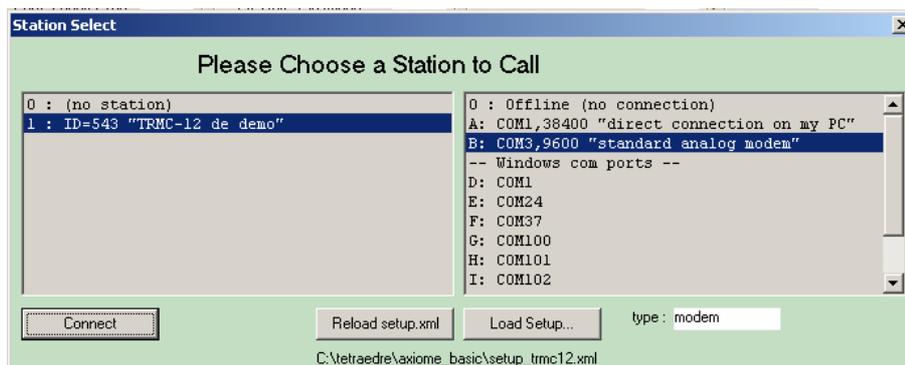
Moreover, Axiome Basic will also use the "phone\_nbr" entry and the PIN code specified in the XML file.

```
<STATION id="543" phone_nbr="0796916383" pin="1234"
```

### Connection procedure

You can start a second instance of Axiome Basic (not necessary to close the USB connected Axiome Basic).

Choose the XML setup file, the TRMC that you want to reach and the right COM port. Click on "Connect".



Axiome Basic will then start a connection sequence that might last for several seconds. Axiome Basic dials the phone number, waits until the TRMC hooks off, negotiates communication parameters, sends the PIN code to the TRMC and wait for the connection acknowledge.

During this time, the "Status" panel on the right side blinks. When the connection is established, the connection remains green. When the access is granted the "Access" panel gets also green.

After a while, if the connection fails, Axiome Basic gives up and a disconnection sequence is initiated.



Once Axiome Basic is connected in GSM DATA mode, then all normal Axiome Basic operations can be performed.

### ***Disconnect procedure***

The connection can be stopped either by clicking "Disconnect" or by sending the order "GSM Off now" to the TRMC.

In the first case, the connection is broken by the PC. Depending on the configuration, the connection could be restarted because the GSM remains switched on until the planned switch off time.

In the second case, the GSM is forced off. This will stop the connection but it will also reduce power consumption. The GSM will remain off until the next planned power on.



## *Contact information*



Adresse : TETRAEDRE S.à.r.l.  
Epancheurs 34b  
2012 Auvernier  
Switzerland

Tel : +41 32 753 71 75  
Mobile: +41 76 570 71 75  
Fax : +41 32 730 61 51  
vente : [sales@tetraedre.com](mailto:sales@tetraedre.com)  
support : [support@tetraedre.com](mailto:support@tetraedre.com)  
Web : [www.tetraedre.com](http://www.tetraedre.com)