TECH NOTE :: 3rd Party Device Integration into catmanAP or QuantumX Data Recorder CX22B-W

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Abstract

This Tech Note describes how to integrate data from a 3rd party device via RS232 into the data file recorded with QuantumX Data Recorder CX22B-W. The shown example uses the **Visual Basic for Application** scripting engine, called **EasyScript** integrating additional signals. Easy Script is part of catmanAP or can be added as plug-in to CX22B-W.

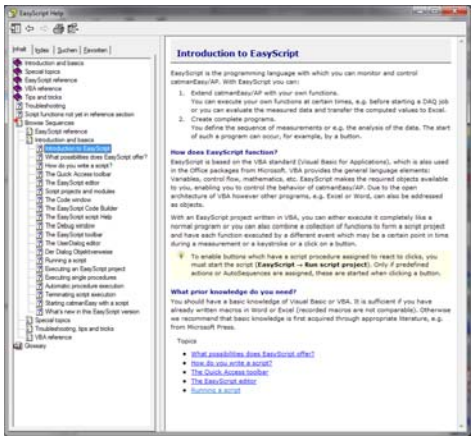
Detailed

EasyScript offers a script editor and engine. EasyScript is the programming language which allows you to automate, monitor and control almost everything catman offers. With EasyScript you can extend catman by your own designed functionality. You can execute your own functions at certain times, e.g. before starting a DAQ job or you can evaluate measured data and transfer the computed values to other programs like Excel or MATLAB.

You can also integrate 3rd party devices. For this purpose you use **auxiliary channels** filled by a script running in a **background routine task** some **5 to 10 times** per second opening for example a specific port, reading or writing to that port according to the defined device protocol.

EasyScript is based on *Visual Basic for Applications (VBA)*, which is also used in Microsoft Office. VBA provides the general language elements: variables, control flow, mathematics, etc. EasyScript makes the required objects available for you, enabling you to control the behaviour of catman. Due to the open architecture of VBA however other programs, e.g. Excel or Word, can also be addressed as objects or data sinks. With an EasyScript project written in VBA, you can either execute it completely like a normal program or you can combine a collection of functions to form a script project and have each function executed by a different event which may be a certain point in time during a measurement or a keystroke or a click on a button.

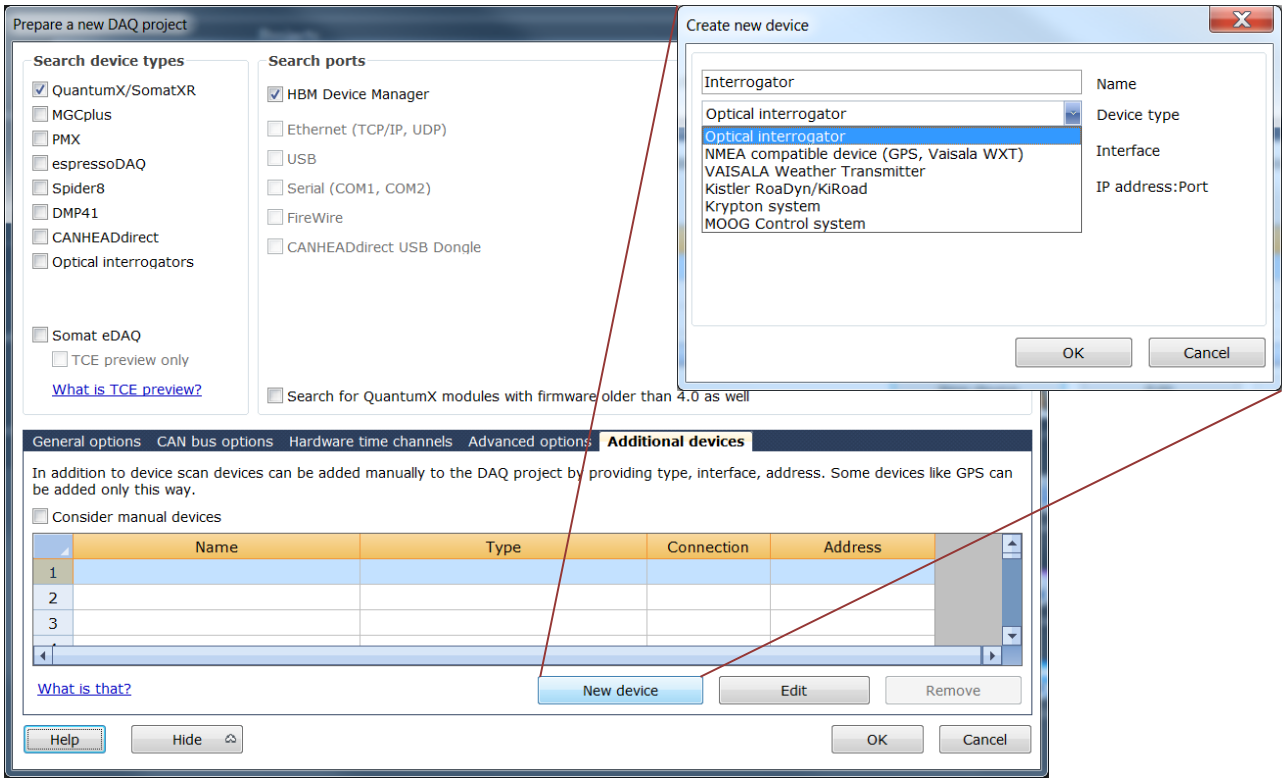
The online help summarizes all the possibilities. Just start catman help and type in EasyScript.



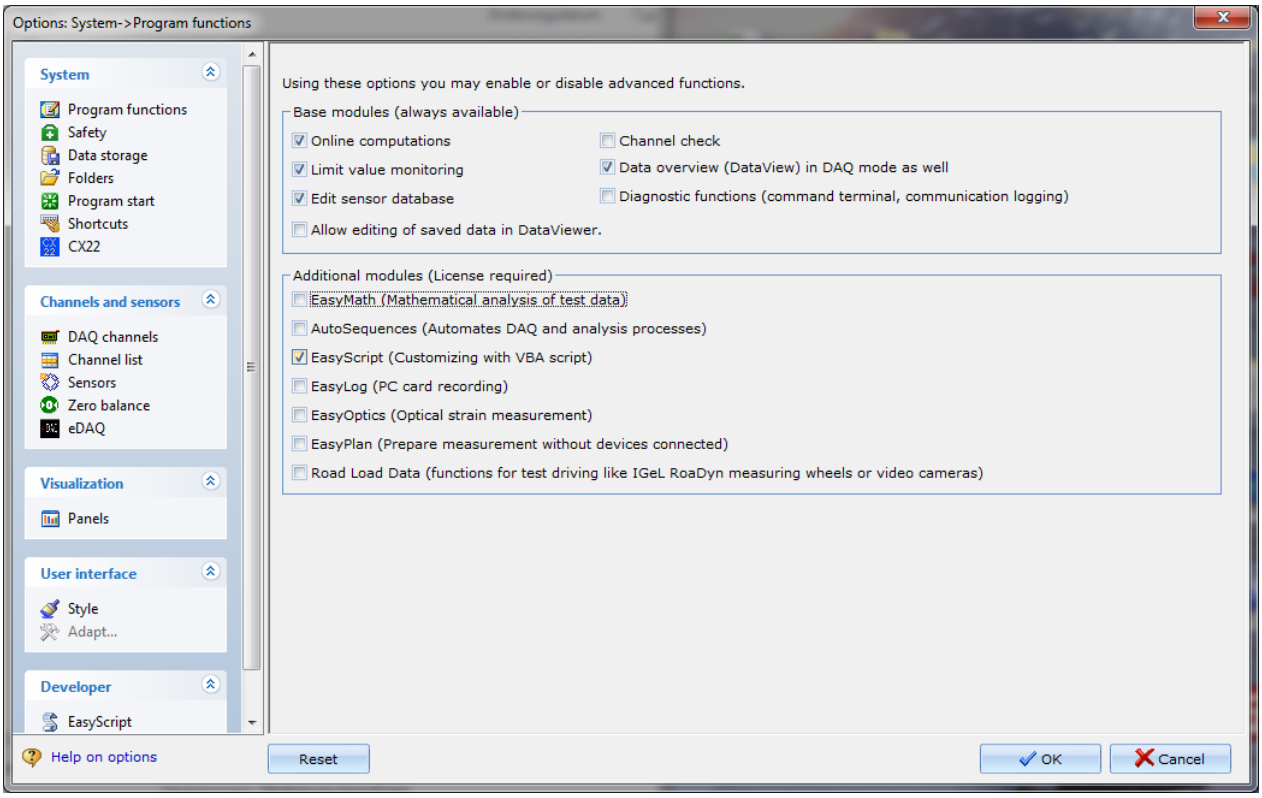
Step by Step Workflow how to integrate a 3rd party device via RS232

The CX22B-W offers a RS232 interface. There is already a bunch of sensors supported in catman such as GPS sensor, Weather station or others based on certain standardized protocols like NMEA.

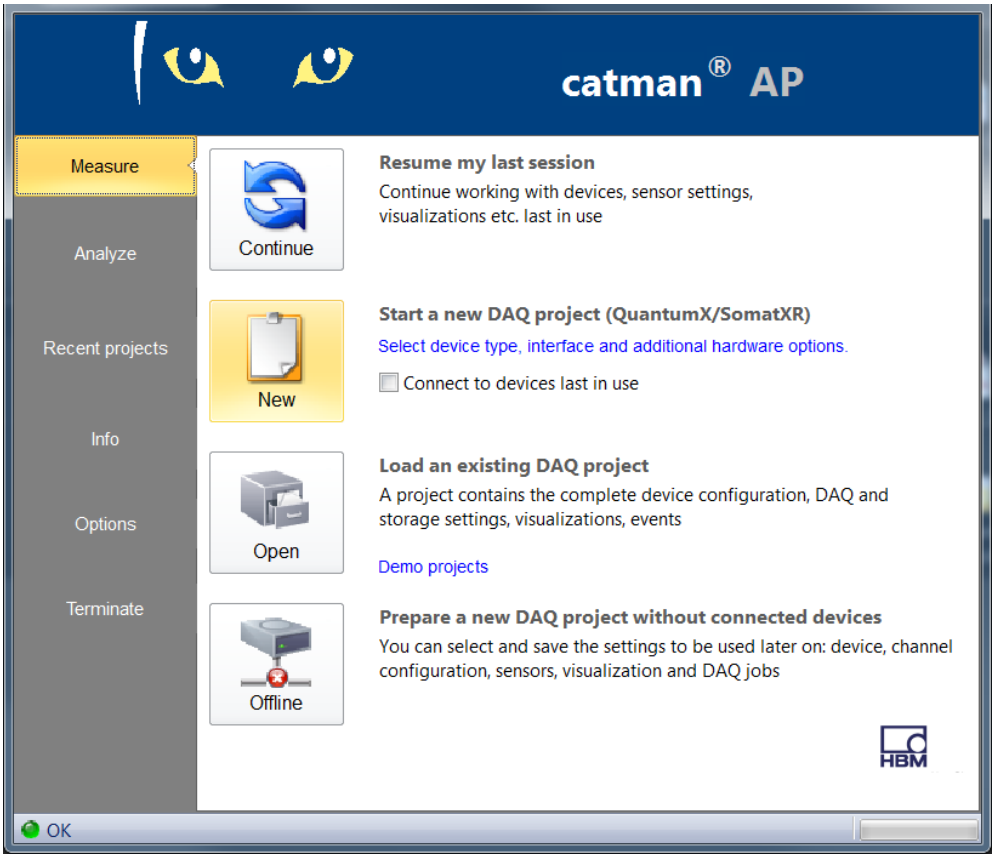
This interface also enables you us to integrate other 3rd party devices on your own.



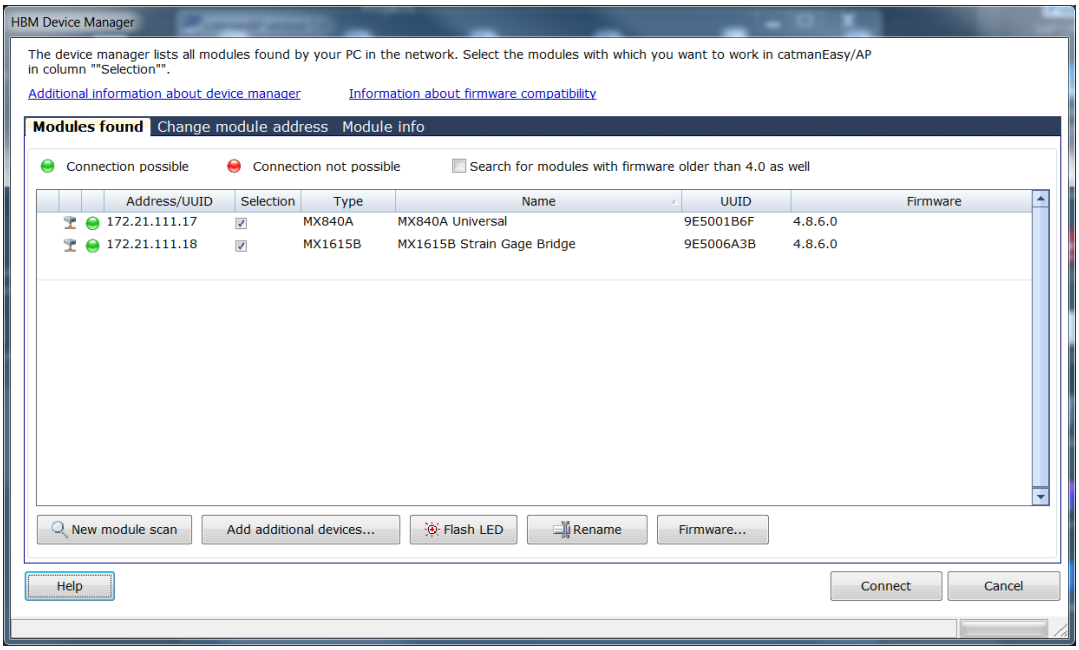
1. Go to -> **Additional Options -> Program functions -> Activate EasyScript**



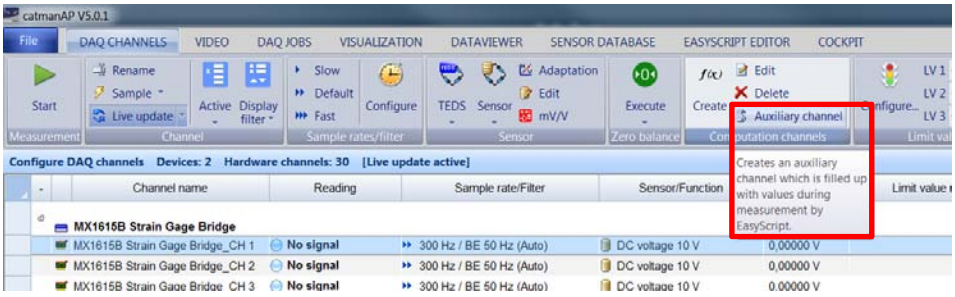
2. Start a "**NEW**" or "**Open**" an existing DAQ project:



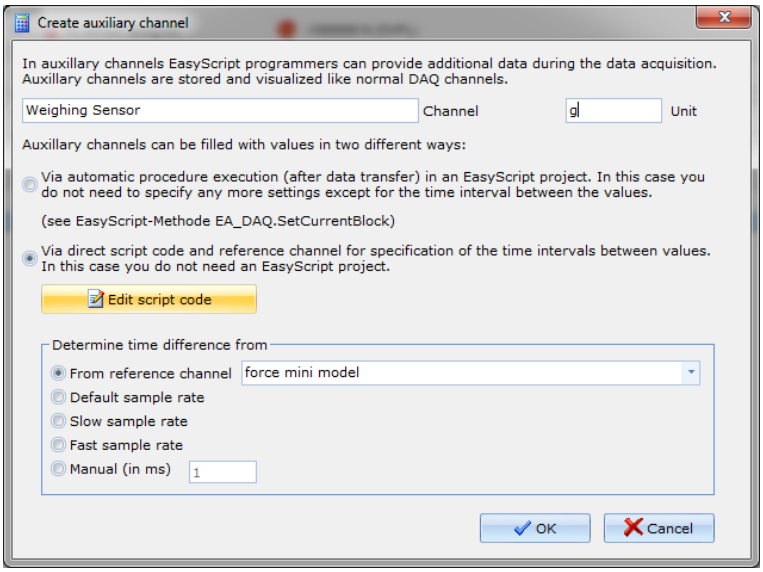
3. **Select** the DAQ hardware you want to work with and **Connect** to it



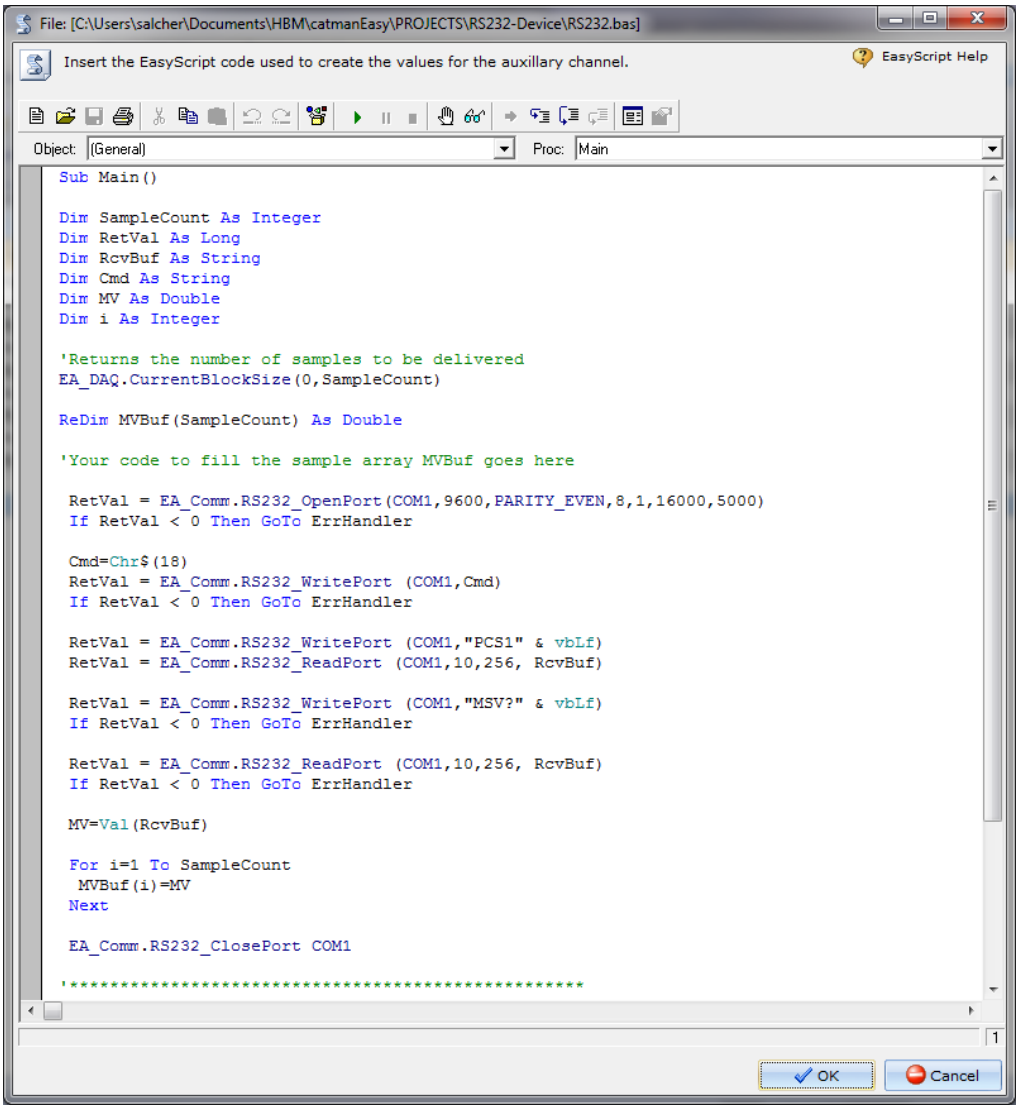
4. Go to page **DAQ CHANNELS** and select an **Auxiliary channel**



5. Create a **name** for the auxiliary channel and a **physical unit**. Also determine a native analog channel from your QuantumX device for **time orientation** and difference calculation. Then select **Edit script code.**



6. **Edit code and store it** (please find a sample code at the end of this TECH NOTE)



7. Start your DAQ job

Sample Code RS232 integration

```
Sub Main()
Dim SampleCount As Integer
Dim RetVal As Long
Dim RcvBuf As String
Dim Cmd As String
Dim MV As Double
Dim i As Integer

'Returns the number of samples to be delivered
EA_DAQ.CurrentBlockSize(0,SampleCount)

ReDim MVBuf(SampleCount) As Double

'Your code to fill the sample array MVBuf goes here

 RetVal = EA_Comm.RS232_OpenPort(COM1,9600,PARITY_EVEN,8,1,16000,5000)
 If RetVal < 0 Then GoTo ErrHandler

 Cmd=Chr$(18)
 RetVal = EA_Comm.RS232_WritePort (COM1,Cmd)
 If RetVal < 0 Then GoTo ErrHandler

 RetVal = EA_Comm.RS232_WritePort (COM1,"PCS1" & vbLf)
 RetVal = EA_Comm.RS232_ReadPort (COM1,10,256, RcvBuf)

 RetVal = EA_Comm.RS232_WritePort (COM1,"MSV?" & vbLf)
 If RetVal < 0 Then GoTo ErrHandler

 RetVal = EA_Comm.RS232_ReadPort (COM1,10,256, RcvBuf)
 If RetVal < 0 Then GoTo ErrHandler

 MV=Val(RcvBuf)

 For i=1 To SampleCount
  MVBuf(i)=MV
 Next

 EA_Comm.RS232_ClosePort COM1

'*****************************************************

'When done, pass the data to the auxiliary channel buffer
EA_DAQ.SetCurrentBlock 0, 1, SampleCount, MVBuf()

Exit Sub
ErrHandler:
 MsgBox EA.LastErrorText

End Sub
```

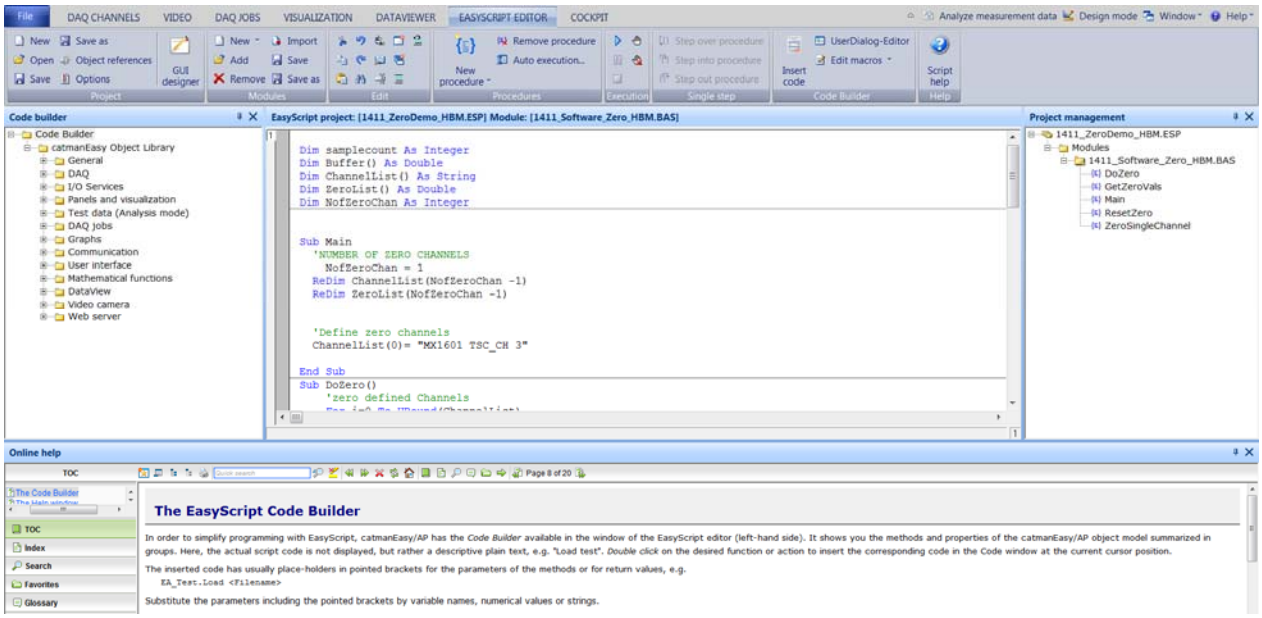
GENERAL

Scripting and automation is deeply embedded into catman. There are several ways automating routines.

Some examples:

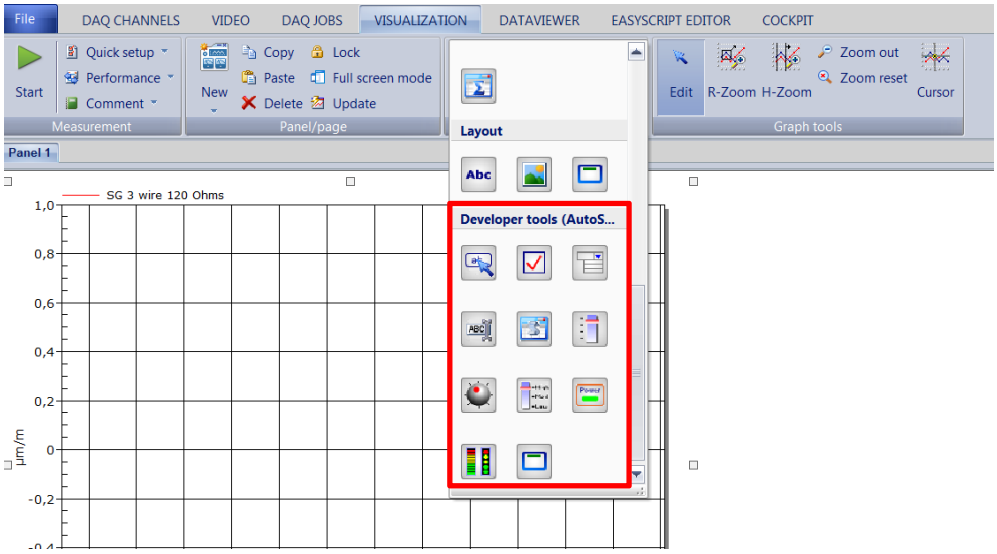
The EASYSCRIPT EDITOR

The editor allows you to create scripts. You will find an integrated object library, project management tools and an online help.

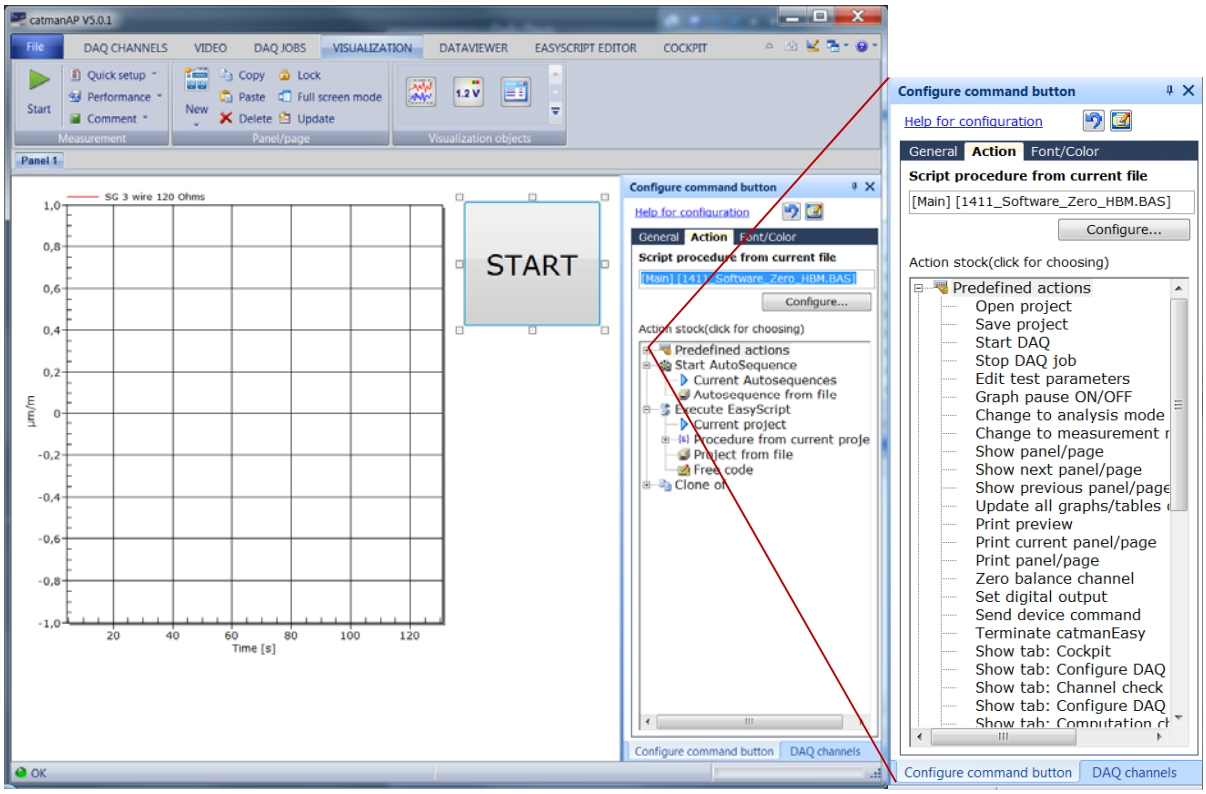


The VISUALIZATION

Place active objects into your visualization or operation panel. You will find some **active objects** in the object library. Select the object you want to use and parameterize it accordingly. This starts from simple buttons, via checkboxes, listings to knobs and so forth.

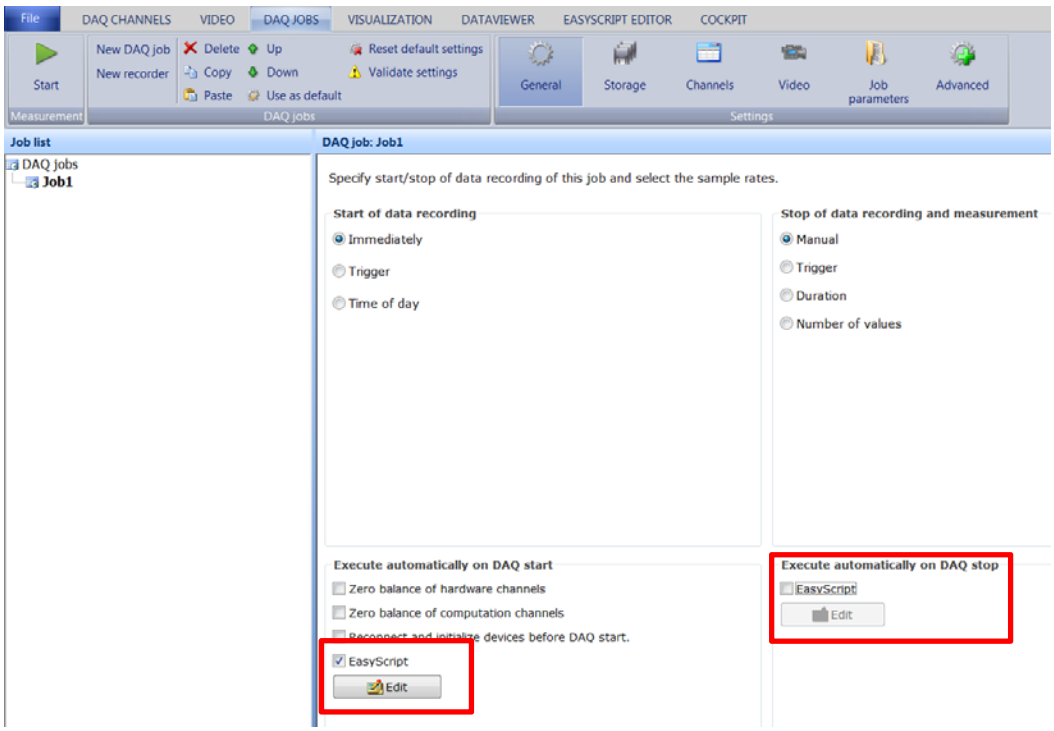


As an example we take a **push button** and select a predefined action like **Start DAQ**



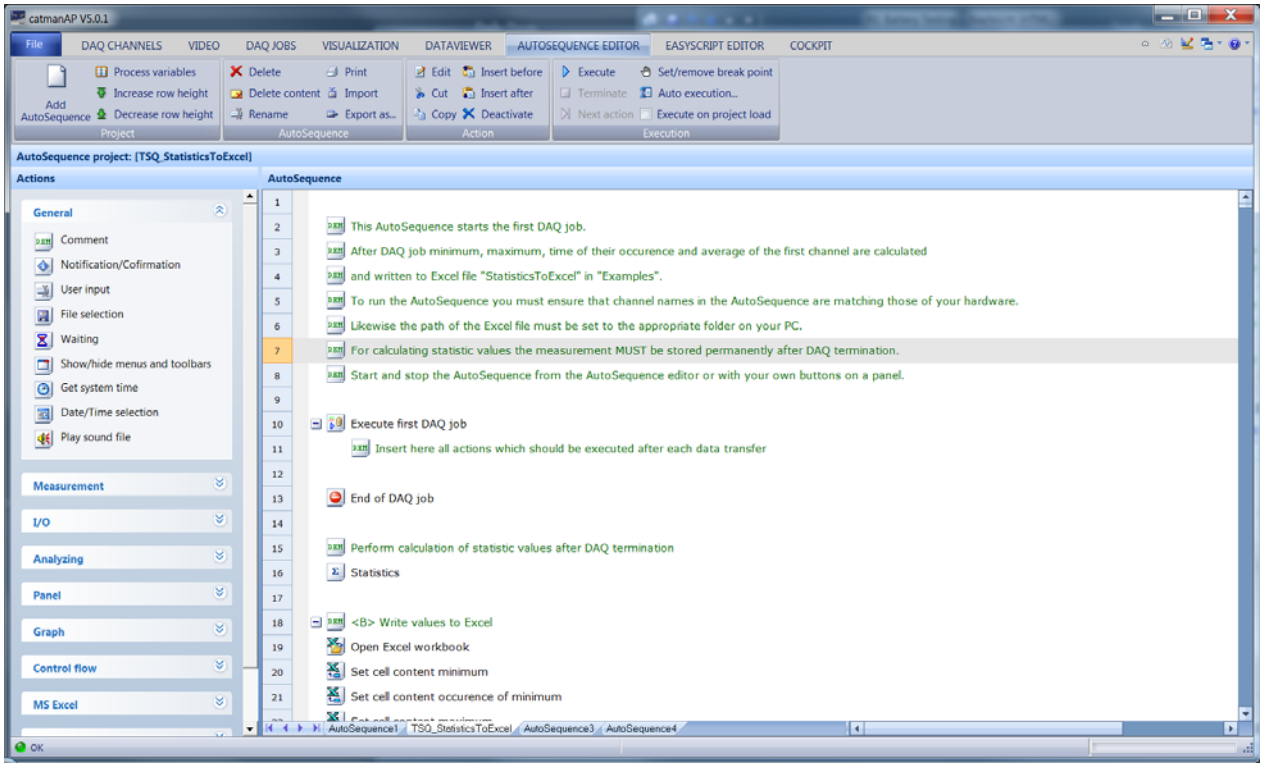
The DAQ JOBS

Directly when starting or finalizing a certain DAQ job you can execute EasyScript code and automate tasks.



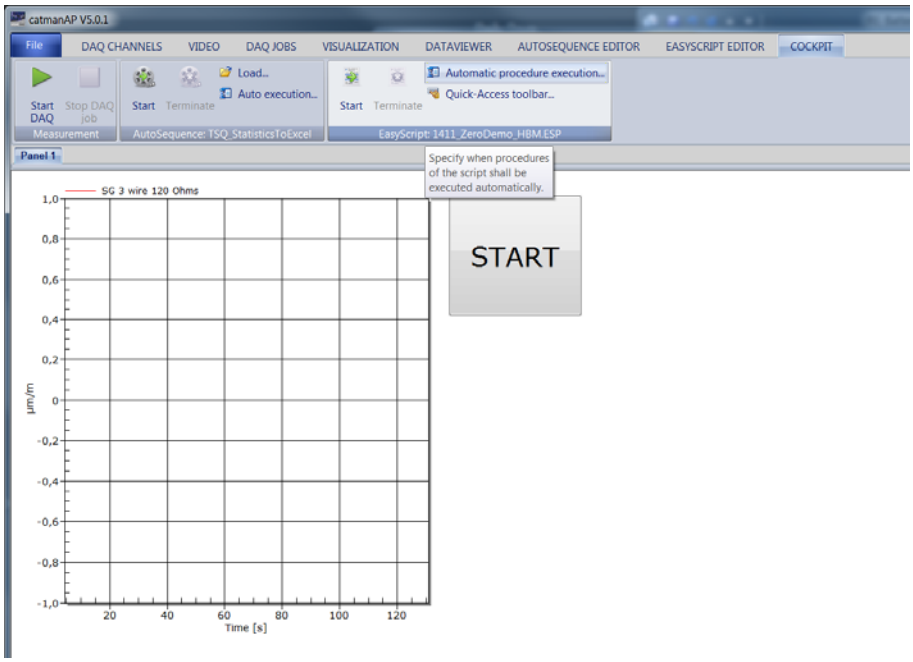
The AUTOSEQUENCE EDITOR

Auto Sequences allow you to more graphically program some routines.



The COCKPIT

The cockpit comes up when using scripts allowing you additional script handling.



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