TECH NOTE :: QuantumX Data Recorder operated by Apple's iPad

Version: 2016-09-29
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Status: public

Abstract

This Tech Note describes how to operate a QuantumX Data Recorder CX22B-W by an iPad tablet from Apple <u>wirelessly</u>.

Intro

The computer and software market is moving towards smaller devices and more flexible user interfaces and thus flooding our private and business life.

- **Wearables** like Apple Watch and Samsung Gear

- **Smart phone** or mobile handhelds like Apple iPhone, iPod or Samsung Galaxy

- **Tablet computer** like Apple iPad or Samsung Galaxy Tab or Microsoft Surface in any size

- **Classic notebooks and PCs** with mouse and keyboard as user interface might come with touch screen

Small and medium size **devices** with **touch operation** seem to be perfect for mobile data acquisition jobs and come with great connectivity (WLAN, Bluetooth, GSM / EDGE, 4G, etc.) and many individual applications. Though, operating systems are different so and it's only Microsoft Windows with the Surface. The smaller devices are owned by Apple (iOS) and Samsung (Googles Android).

The QuantumX Data Recorder CX22B-W offers some great connectivity too with WLAN ([WLE200NX inside: 802.11n, 802.11g, 802.11b, 802.11a](#)), USB 2.0 and 3.0 which allow also Bluetooth connection.

The Data Recorder runs Windows Embedded 8 and the powerful catmanAP software which allows touch-operation of individual visualization and operation panels you can create during setup. So the basics are there. All we need is setting up a WLAN connection to the Data Recorder and getting access to the recorder by **Remote Desktop Operation**.

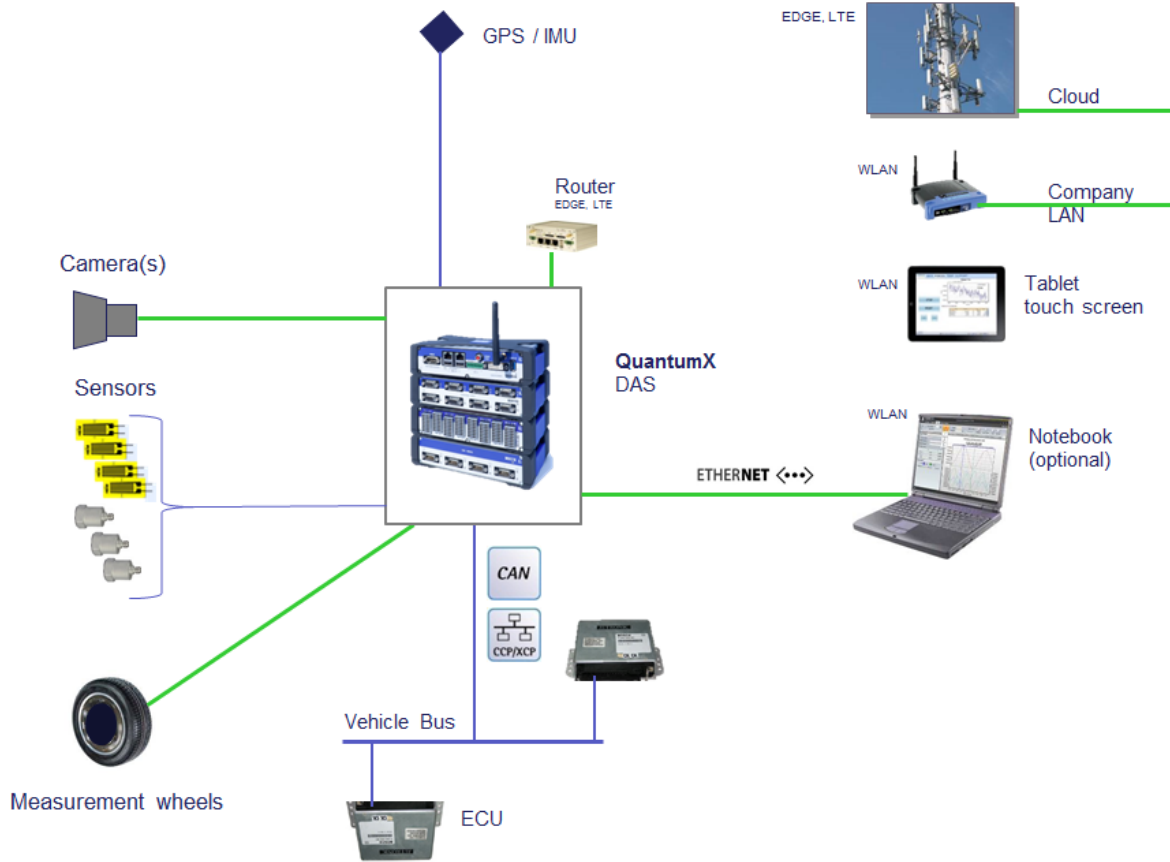## Connecting an iPad to QuantumX Data Recorder over WLAN

This Tech Note describes how to connect an iPad to QuantumX Data Recorder and how to work with individual graphical visualization panels.

Apples iPads offer some nice features like WLAN, high resolution, multi touch operation (2 finger zoom) and an integrated gyro to switch from vertical to horizontal view, just to name few features.

Connection to an iPad can be set up in several ways:

1. **direct WLAN communication** between iPad and CX22B-W, a so called **ad-hoc connection**

2. integrating CX22B-W and iPad into a WLAN **hot spot or router**

3. remote access via internet connection by tools like **Team Viewer**

**The overall connection possibilities to QuantumX Data Recorder CX22B-W**

Ad-hoc connection between iPad and QuantumX Data Recorder CX22B-W
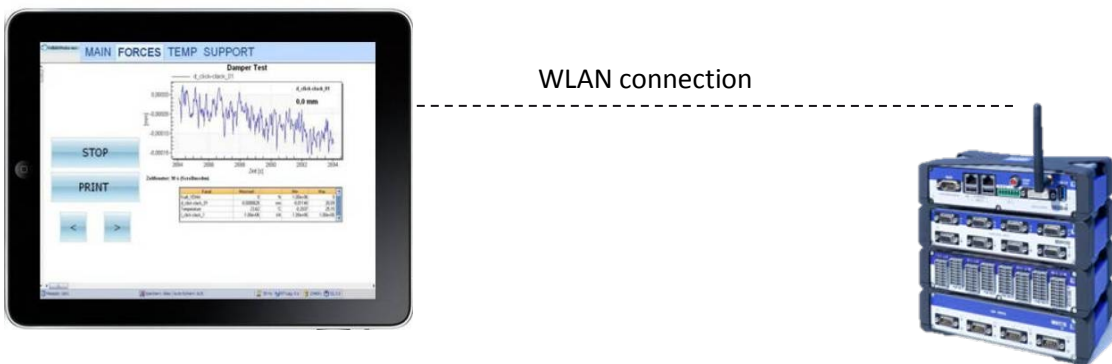
WLAN connection

The CX22B-W can also be seen as "QuantumX embedded box PC with Windows Embedded operating system". You can access the CX22B-W remotely over WLAN by a so called "ad-hoc connection" and then launch the software "Remote Desktop" to directly connect to the unit. Remote Desktop applications are available for many computers and operating systems like Windows™ from Microsoft, iOS™ from Apple or also Linux. On Microsoft operating systems this application is pre-installed. For Apples iOS this application has to be downloaded in the **App store**.

1st step: Configure WLAN of your QuantumX Data Recorder CX22B-W

You might have gone over the settings of the recorder already and configured the unit for ad-hoc connection between your notebook and the CX22B-W. That's easy as Windows is talking to Windows. It offers the highest comfort as both machines are finding each other easily and are exchanging their IP adresses in an automatic manner (APIPA). So not even IP configuration is necessary.
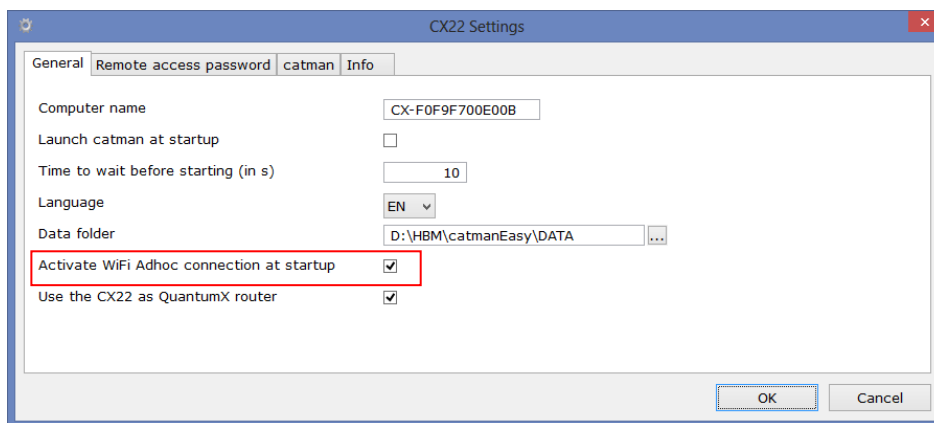

With this configuration you find the CX22B-W anytime from your notebook via WLAN and easily find and access it by **HBM Device Manager**, a Windows tool:
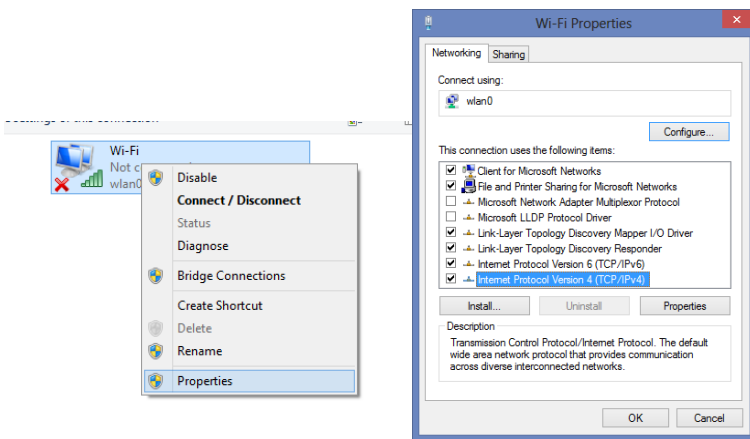

Preparing for iPad connection, configure WLAN of the CX22B-W with a fix IP address and parameterize it to work as "WLAN server" waiting for a direct connection (ad-hoc) over remote desktop connection.
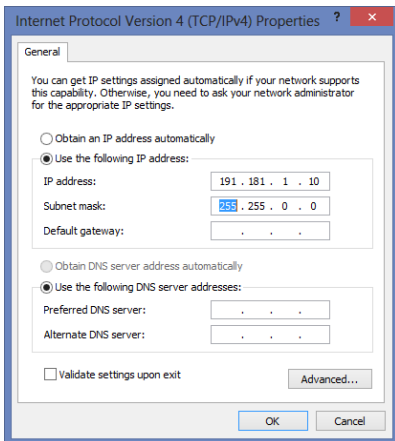
Open Network Connections by right mouse click on WLAN icon in tray.
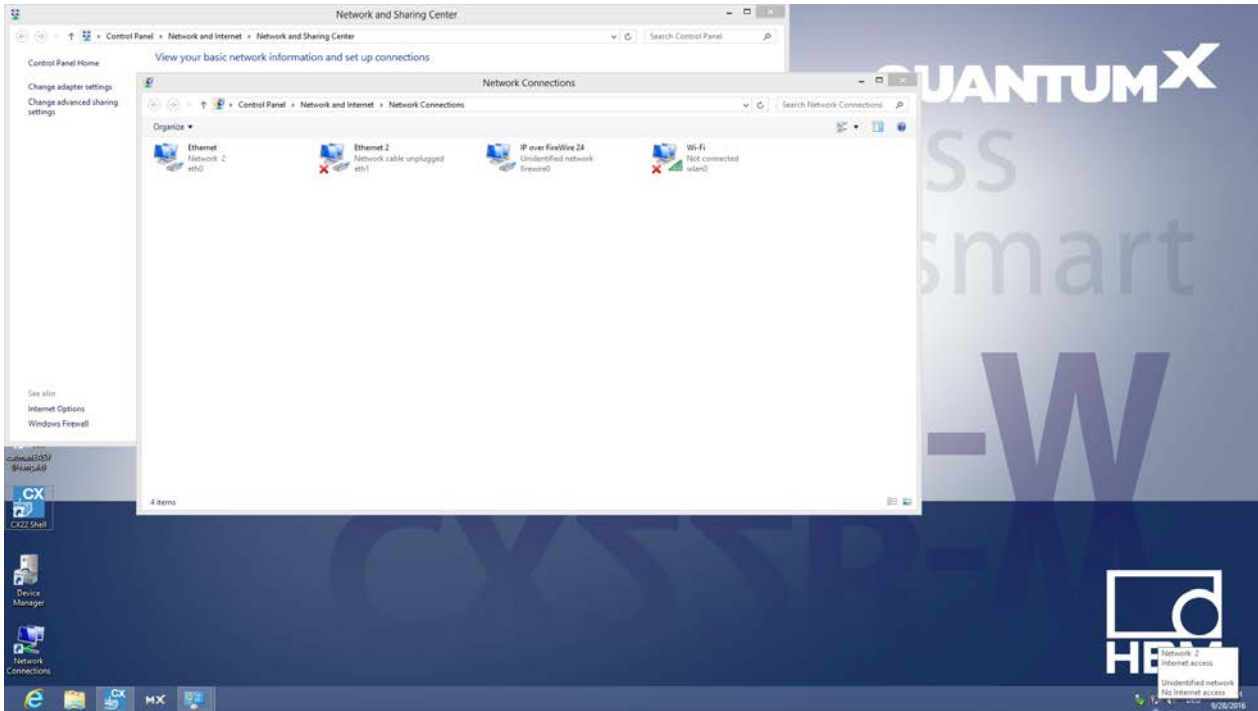
Go to WLAN adapter and open dialogue with right mouse click. Select "Properties"

Go to Internet "Protocol Version 4 (TCP / IPv4)" -> "Properties and enter
IP address: **191.181.1.10** and Subnet mask: **255.255.0.0**

You can double check the IP address or the device name of the unit in this way:

1. Click Start or tap the Windows button on your keyboard.

2. Type "Control Panel".

3. Click the result "Control Panel".

4. Click "System and Security", and then under System, click "See the name of this computer". The full PC name is listed under Computer name, domain, and workgroup settings.

Computer Name: CX-F0F9F700E017
(basically the prefix **CX-** and the **MAC address** your recorder, which can be found on the rear side of the recorder too)
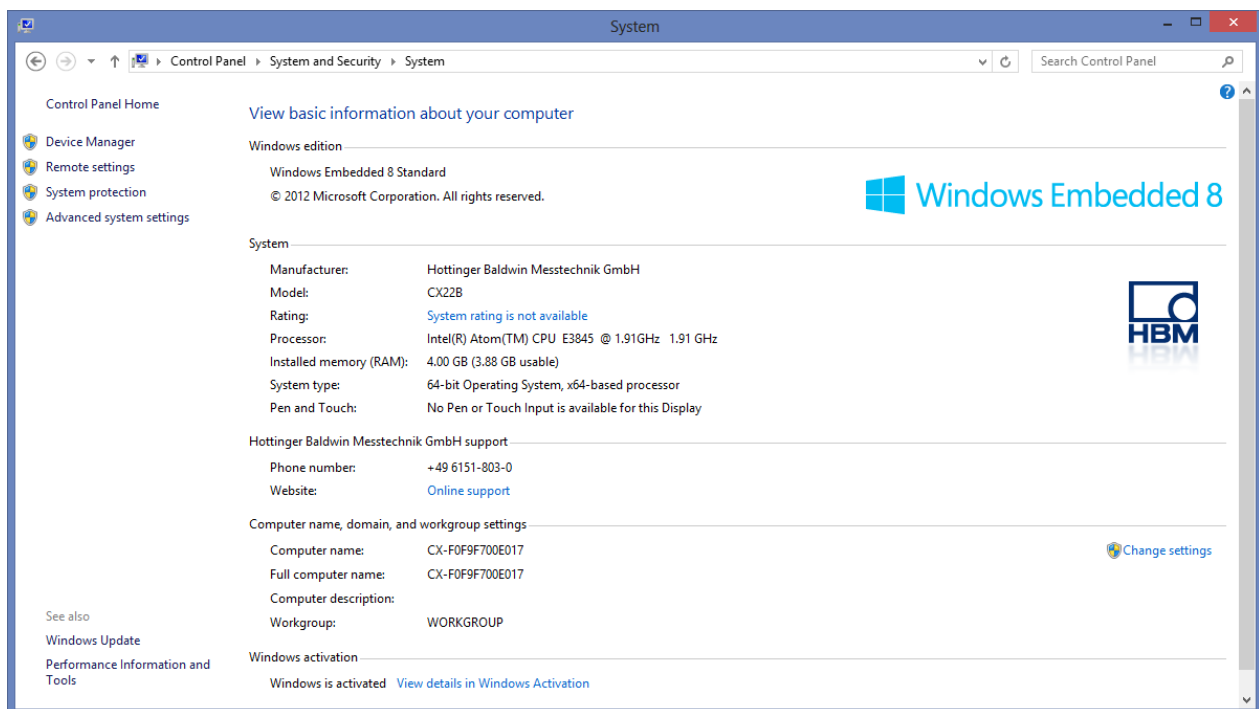
MOST IMPORTANT

Go back to the QuantumX Data Recorder Shell and press "Save and restart".

With this step all modifications to the operating system are permanently saved and are active right after boot up. This mechanism opens the "Enhanced Write Filter" for constant storage which protects the operating system of the Data Recorder.

2nd step: Download Remotedesktop App

We tested several Apps from "**Desktop Connect**" from Antecea Inc or "Remotedesktop" from Microsoft. You can download via the **App Store**.

Development: Microsoft Cooperation App: **Remotedesktop** Cost: **free** Platform: iPad, iPod, iPhone Tested version: 8.1.26 Size: ~ 25 MB Languages: English, German, French, Italian, Spanish, Portuguese, Japanese, Chinese,….	

3rd step: Configure WLAN of the iPad

Start the iPad and open Properties Dialogue.

Go to Wi-Fi page and connect to CX22
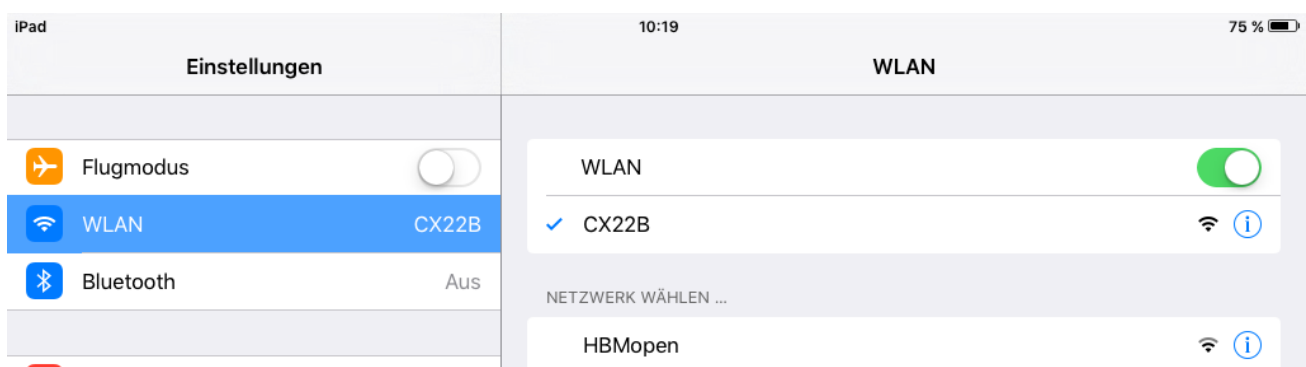
Configure IP configuration in a static way: 191.181.1.20 and subnet mask: 255.255.0.0

Start "Remotedesktop" App

Add Desktop by clicking **+** in the upper right corner.

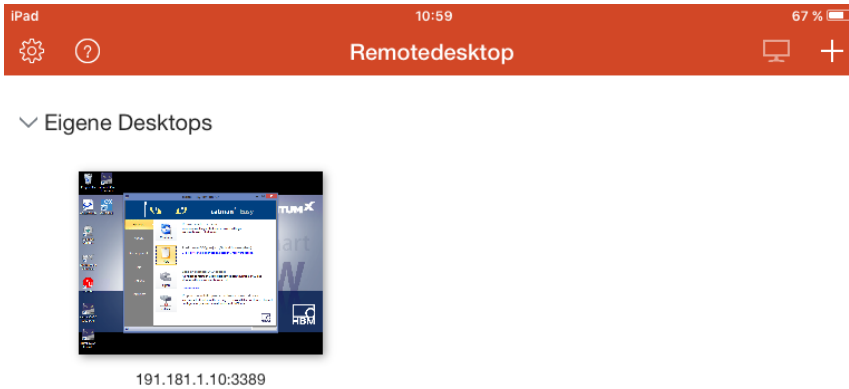Enter the IP address and the port: **191.181.1.10:3398**
Enter Username: **HBMCX22**
Enter your Password: *hbm* (default, can be changed in settings dialogue)

Abbrechen	Anmeldeinfos	Fertig
191.181.1.10:3389		
Benutzername	HBMCX22	
Kennwort	•••	⊗
Benutzername und Kennwort speichern		

Now your configuration is permanently stored in the Remotedesktop list:

Connect to the CX22, start catman and open a certain project you created before. You can also run catman in autostart.


4th step: Configure catman in the way you can work in touch operation via WLAN

In case you didn't prepare a project for touch operation, here some steps to do so…

catman's visualization and operation allows you a freely configurable user interface.
You can create several **panels** showing and solving different aspects of your test & measurement job.
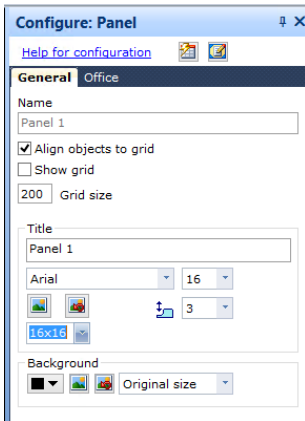
The panels can be configured to work as **Panel** (freely configurable), **Scope** (oscilloscope style), **Floating panel** (for multiple screens or multiple panels showing some major signals permanently) and **Print page** (targeting a live report).
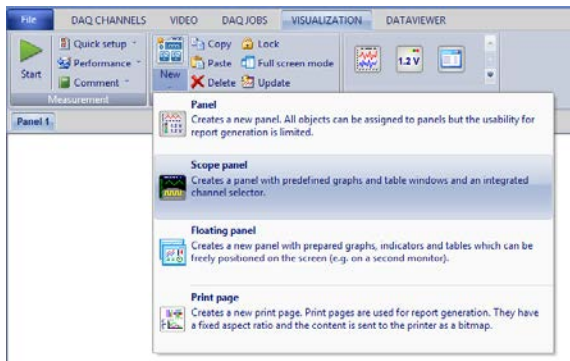
Let's start with a simple Scope and select some inputs and visualize it. You can easily add different types in a pre-defined style like FFT, Numerical table, angle sync display, digital indicator, Digital indicator.
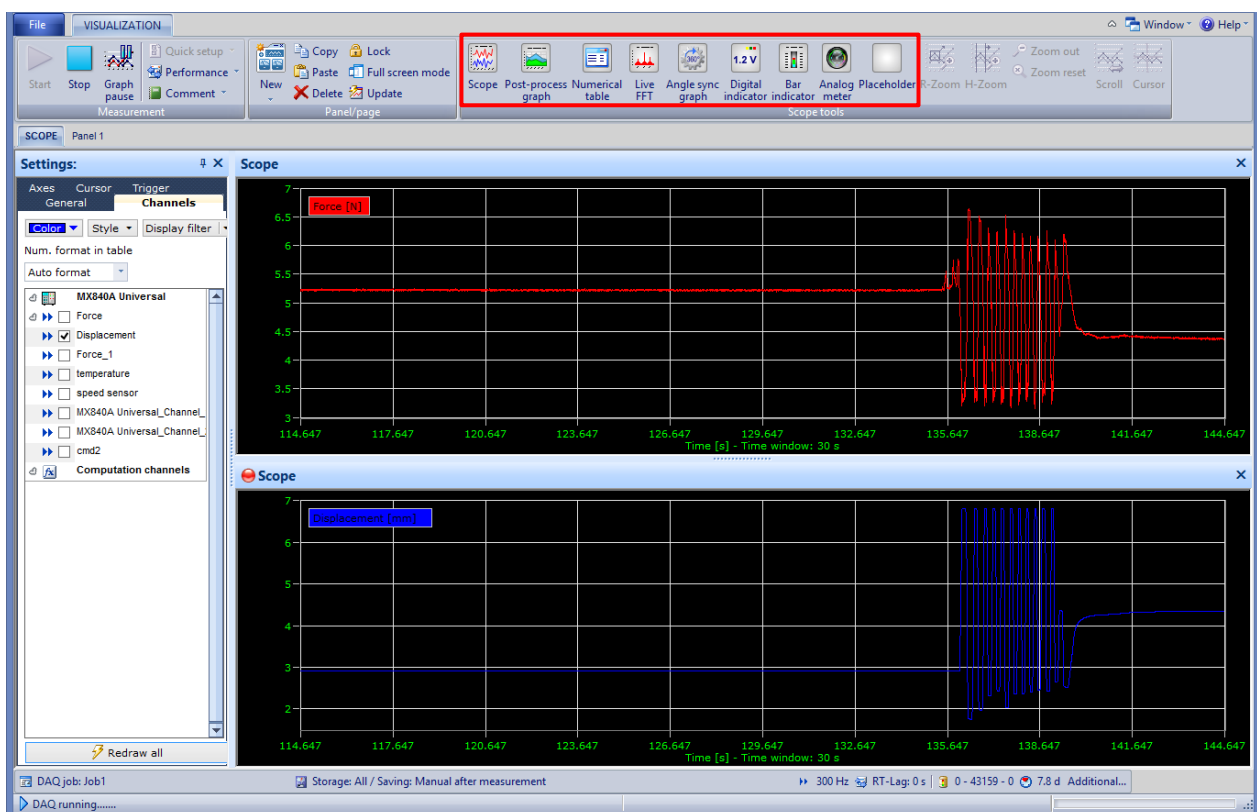
Next example shows a **freely configurable Panel**. You can modify the size and style of the panel tab. You can even add pictures or pictograms if needed. We enlarge it a little so it can be operated by touch and add a LED as icon (you can some in \hbm\catmanEasy\LEDIMAGES

Configure: Panel

Help for configuration

General | Office

Name
Panel 1

☑ Align objects to grid
☐ Show grid
200 | Grid size

Title
Panel 1
Arial | 16
3
16x16

Background
Original size

After these preliminary settings you are ready to create your **individual user interface**. You have the following options:

Real-time graph ▷

Digital indicator ▷

Simple table ▷   Button ▷

Flexible table ▷   Checkbox/radio button ▷

Analog meter ▷   Listbox ▷

Bar indicator ▷   Text entry field ▷

Configure multi-bar graph ▷   (Script) table ▷

Frequency spectrum (live FFT) ▷   Slide control ▷

Spectrogram ▷   Rotary knob ▷

Polar diagram ▷   Slide switch ▷

(Real-time) cursor graph ▷   On/off switch ▷

LED ▷   LED array ▷

Video camera display ▷
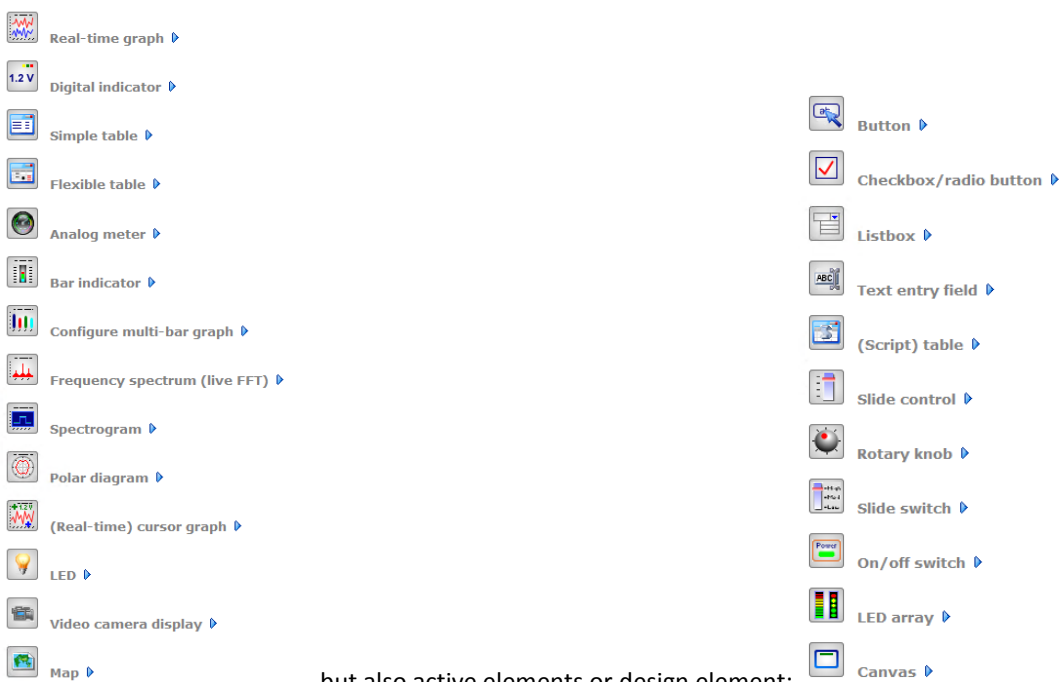
Map ▷   .. but also active elements or design element: Canvas ▷

Let's create something like a main screen with canvas, title, start and stop buttons and some visualization objects.

Select and place the **Canvas** first, select colour and style.

Then select and place the **Text entry field** and use it as title like "Brake Testing".

Create Drag signals from the DAQ channels list to the visualization panel and drop it:
Decide what to take: Digital indicator, Real-time graph, Analog meter, Bar indicator or Table. You can also set this activity as default. You can also highlight several channels / signals in one shot.
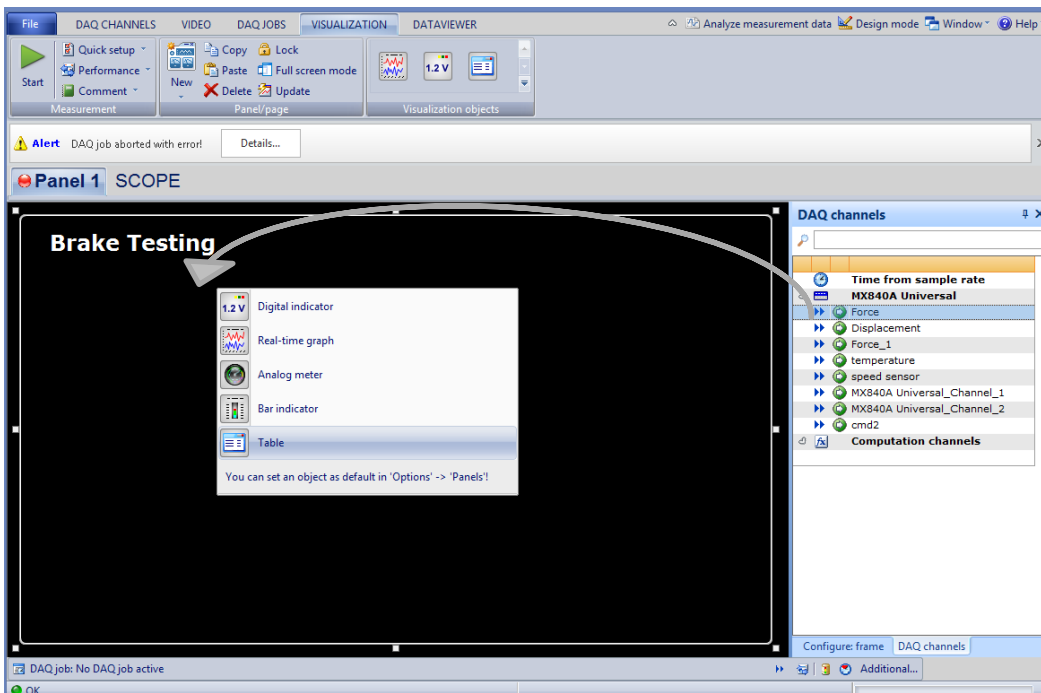
The **Push buttons** can be used to starting and stopping data acquisition by a pre-defined action. Set the size, font and colour and then select the predefined action for the button.
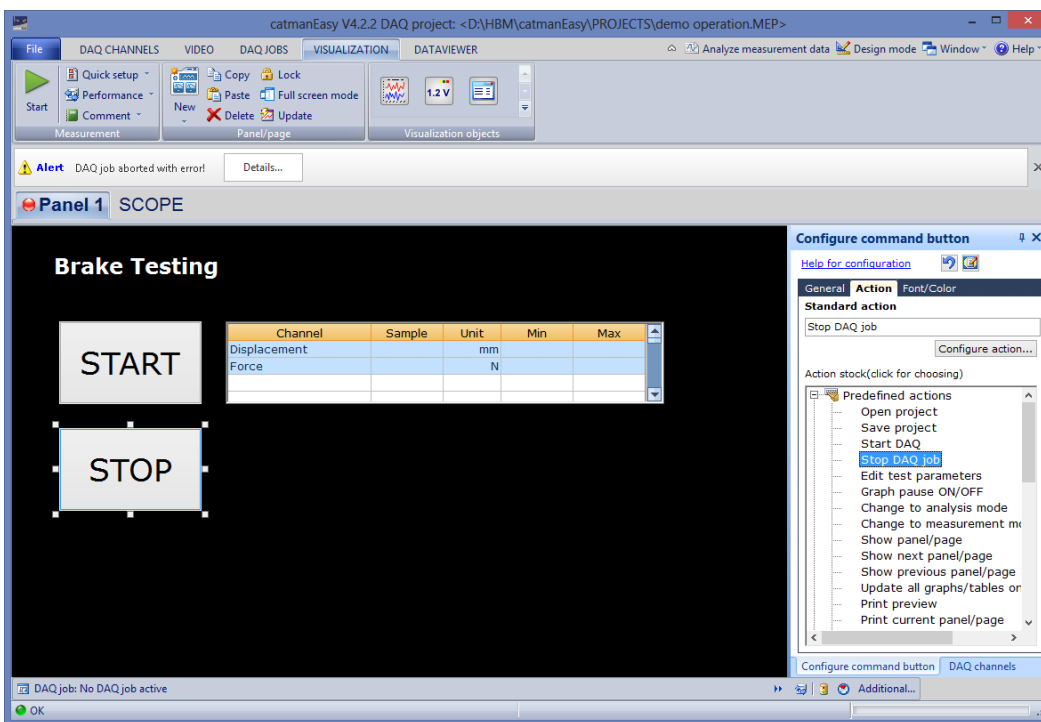
Last but not least you can place canvas and maybe your company logo and bring it the very back of all objects.
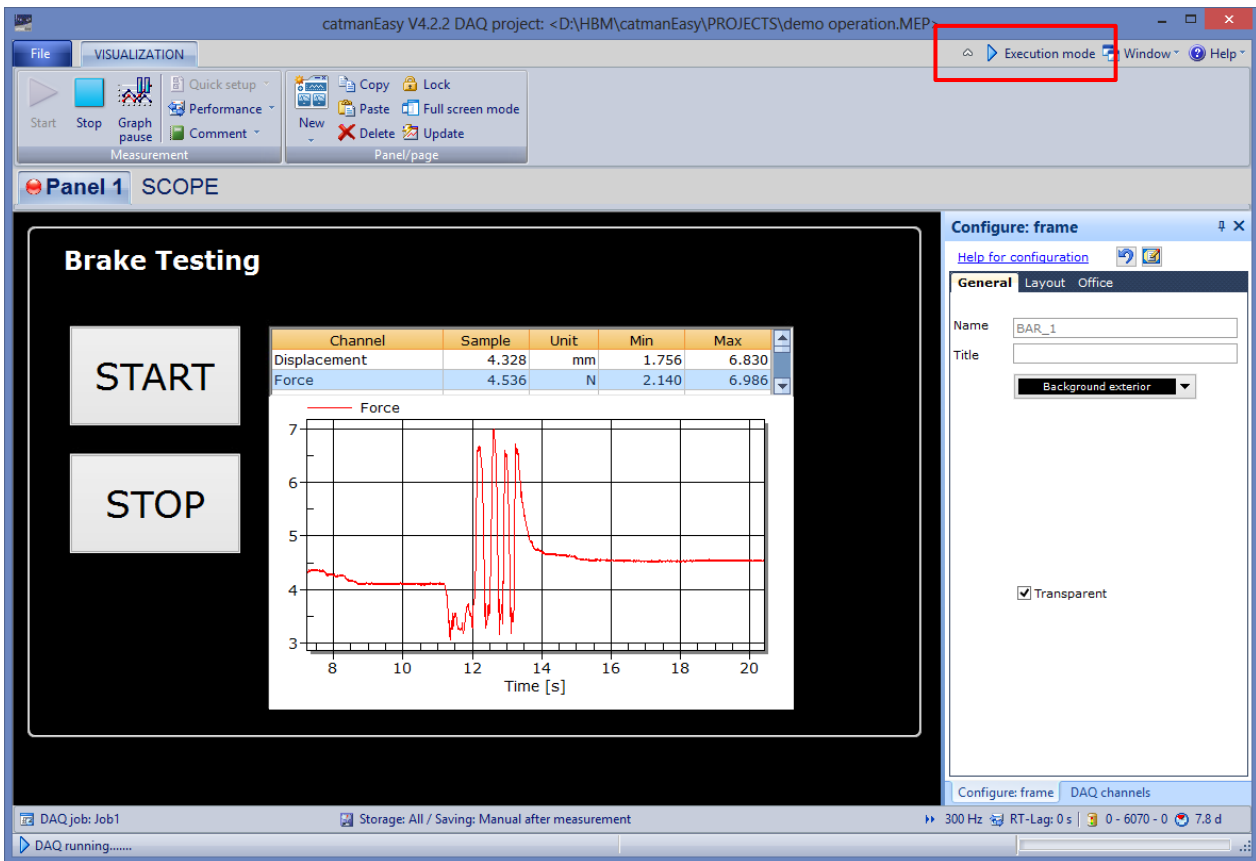
Making it plug & play we need to also parameterize the DAQ job with automatic naming.
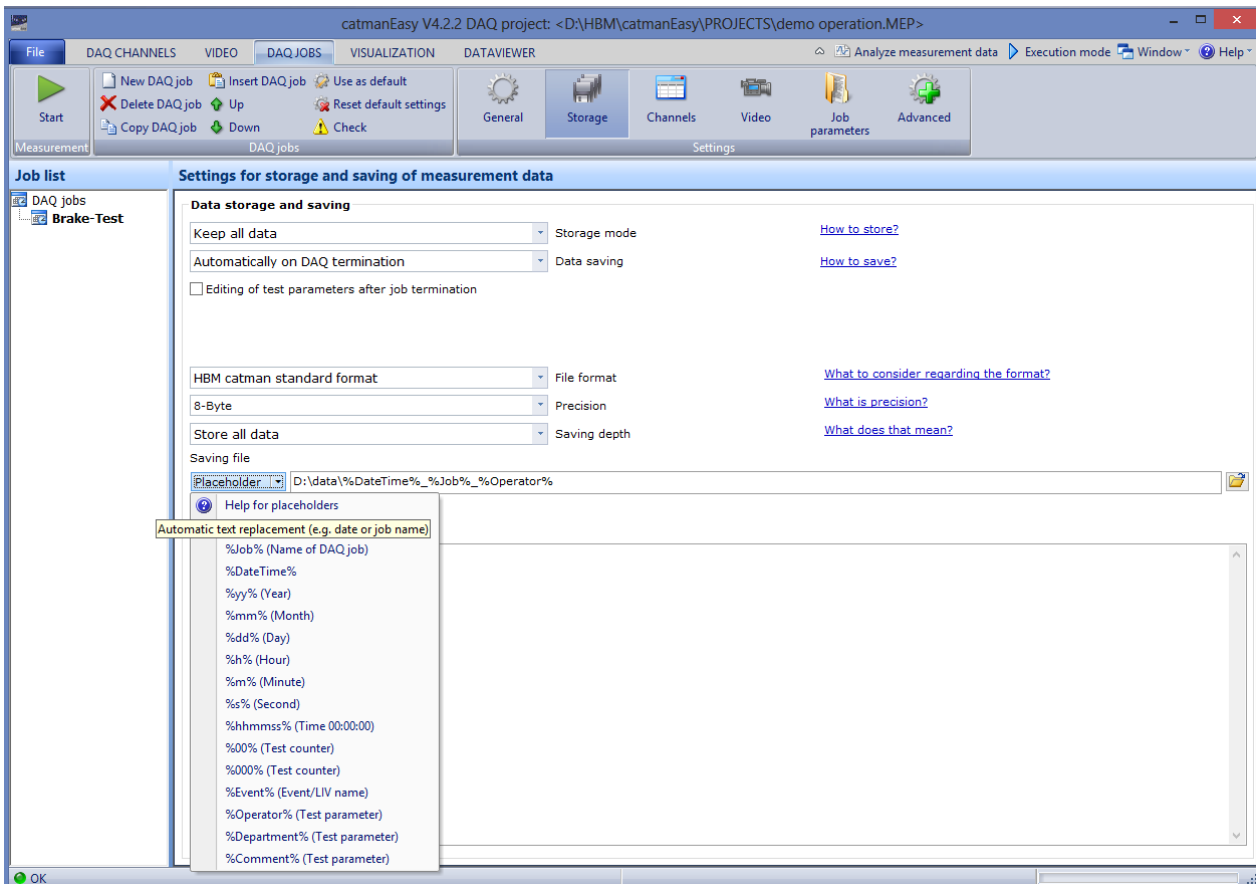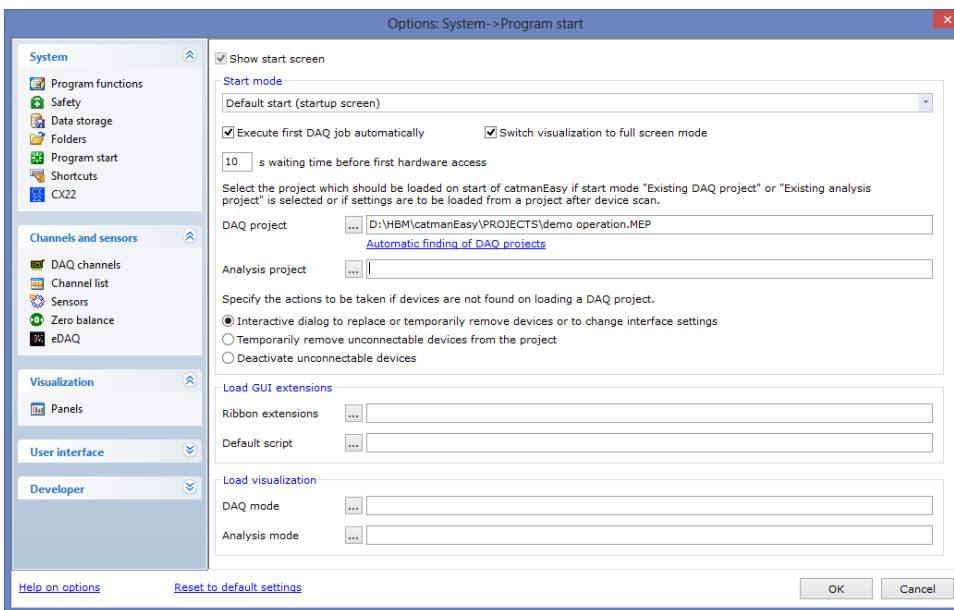
Every time I start and stop the DAQ job a data file is created.

You can quickly check the amount and size of files via the QuantumX Data Recorder shell - just push the **Data** button.

Now save your project and activate **autostart**. You can do this via File -> Options -> Program start or via the shell.
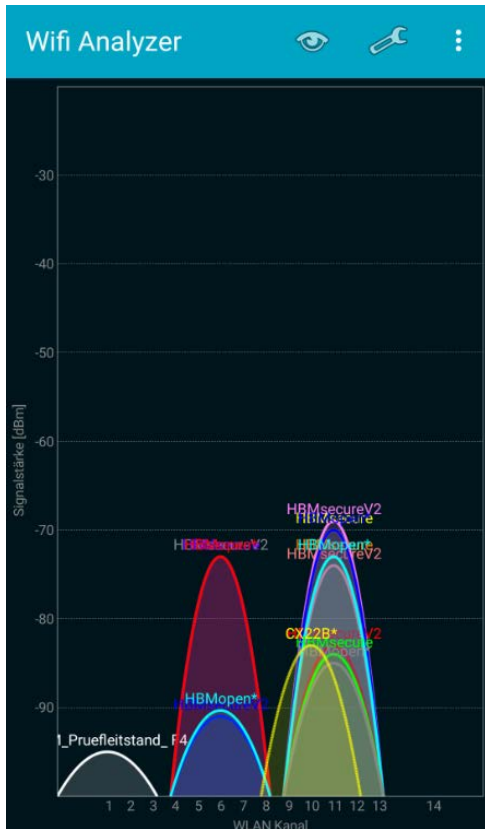
Done – have fun operating QuantumX with an iPad.

Troubleshooting

In case you have trouble connecting to the Data Recorder control your WLAN settings and the carriers used in your environment. There are plenty of tools available like **Wifi Analyzer**.

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