

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

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## Abstract

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

## 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 (<u>WLE200NX inside: 802.11n, 802.11g, 802.11b, 802.11a</u>), 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

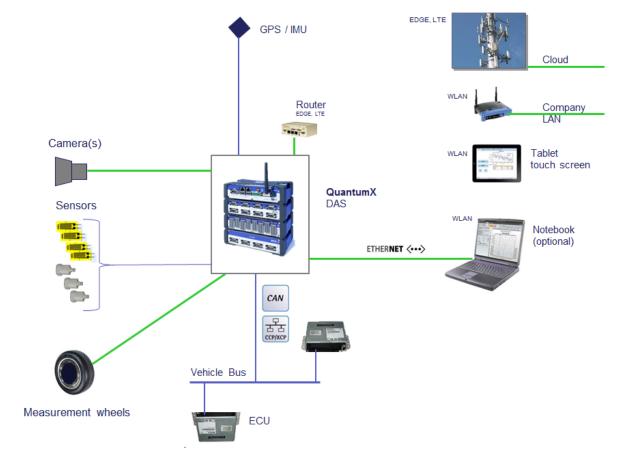
This Tech Note describes how to connect an iPad to QuantumX Data Recorder and how to work with individual graphical visualization panels.

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:

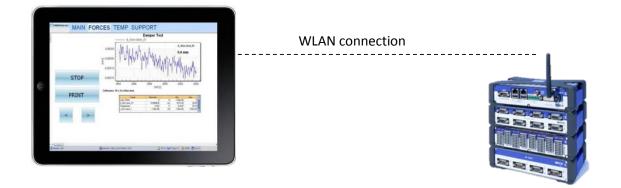
- 1. direct WLAN communication between iPad and CX22B-W, a so called ad-hoc connection
- 2. integrating CX22B-W and iPad into a WLAN hot spot or router
- 3. remote access via internet connection by tools like **Team Viewer**





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

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



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<sup>™</sup> from Microsoft, iOS<sup>™</sup> 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.



	CX22 Settings
General Remote access password catman Inf	io
Computer name Launch catman at startup	CX-F0F9F700E00B
Time to wait before starting (in s)	10
Language	EN 🗸
Data folder	D:\HBM\catmanEasy\DATA
Activate WiFi Adhoc connection at startup	
Use the CX22 as QuantumX router	
	OK Cancel

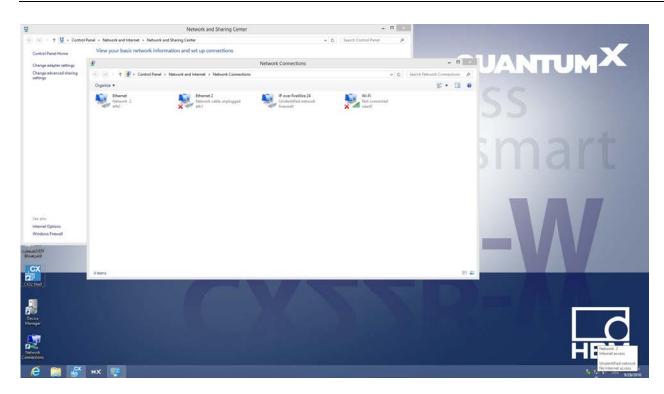
With this configuration you find the CX22B-W anytime from your notebook via WLAN and easily find and access it by **HBM Device Manager**, a Windows tool:



**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"

	<u>₽</u>	Wi-Fi Properties	
	Networki Connec	-	
Wi-Fi	This cor	Connection uses the following items:	onfigure
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Image: Second	wide		e default

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

Internet Protocol Version 4 (TC	CP/IPv4) Properties ? ×			
General				
You can get IP settings assigned automatically If your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.				
Obtain an IP address automatica	lly			
• Use the following IP address:				
IP address:	191.181.1.10			
Subnet mask:	255.255.0.0			
Default gateway:				
Obtain DNS server address automatically				
Use the following DNS server add	dresses:			
Preferred DNS server:				
Alternate DNS server:				
Validate settings upon exit	Advanced			
	OK Cancel			



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)

<u>بع</u>		System	- D ×
🛞 🎯 👻 🕇 🛃 ד Control Par	nel → System and Security → Sy	stem	✓ C Search Control Panel P
Control Panel Home	View basic information	about your computer	Ø ^
🚱 Device Manager	Windows edition		
🚱 Remote settings	Windows Embedded 8 Star	ndard	
System protection	© 2012 Microsoft Corporat	tion. All rights reserved.	Windows Embedded 8
🚱 Advanced system settings			
	System		
	Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
	Model:	CX22B	
	Rating:	System rating is not available	
	Processor:	Intel(R) Atom(TM) CPU E3845 @ 1.91GHz 1.91 GHz	HBM
	Installed memory (RAM):	4.00 GB (3.88 GB usable)	HBM .
	System type:	64-bit Operating System, x64-based processor	
	Pen and Touch:	No Pen or Touch Input is available for this Display	
	Hottinger Baldwin Messtechni	k GmbH support	
	Phone number:	+49 6151-803-0	
	Website:	Online support	
	Computer name, domain, and	workgroup settings	
	Computer name:	CX-F0F9F700E017	😚 Change settings
	Full computer name:	CX-F0F9F700E017	
	Computer description:		
See also	Workgroup:	WORKGROUP	
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#### **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.



## 2<sup>nd</sup> 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,	

## 3<sup>rd</sup> step: Configure WLAN of the iPad

Start the iPad and open Properties Dialogue.

Go to Wi-Fi page and connect to CX22

iPad		10:19	75 % 💷)
Einstellunge	n	WLAN	
Flugmodus	$\bigcirc$	WLAN	
🛜 WLAN	CX22B	✓ CX22B	<b>∻</b> (i)
Bluetooth	Aus	NETZWERK WÄHLEN	
<b></b>		HBMopen	<b>२</b> (i)

Configure IP configuration in a static way: 191.181.1.20 and subnet mask: 255.255.0.0

DHCP	BootP	Statisch	
IP-Adresse		191.181.1.20	
Teilnetzmaske		255.255.0.0	
Router			
DNS			

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	•••	8
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Now your configuration is permanently stored in the Remotedesktop list:

iPad		10:59	67 % 💷
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191.181.1.10:3389

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



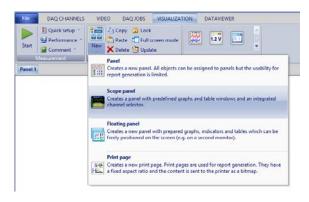


#### 4th step: Configure catman in the way you can work in touch operation via WLAN

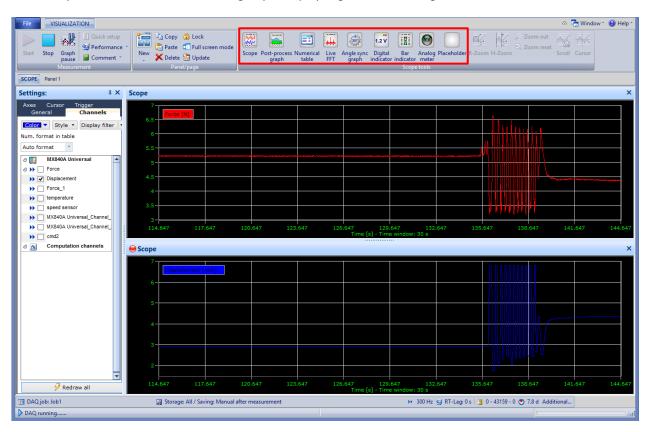
In case you didn't prepare a project for touch operation, here some steps to do so...

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 predefined 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	ąΧ
Help for configuration 🛛 🕅	
General Office	
Name	
Panel 1	
✓ Align objects to grid	
Show grid	
200 Grid size	
Title	
Panel 1	
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🛋 🍓 🛨 🖌 3 👻	
16×16 ~	
Background	
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After these preliminary settings you are ready to create your **individual user interface**. You have the following options:

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1.2 V	Digital indicator 🕨		
	Simple table 🕨		Button 🕨
	Flexible table 🕨	$\checkmark$	Checkbox/radio button 🕨
	Analog meter 🕨		Listbox 🕨
	Bar indicator 🕨		Text entry field ▶
<b>.</b>	Configure multi-bar graph 🕨	3	(Script) table 🕨
Щ.	Frequency spectrum (live FFT) 🖡		Slide control
	Spectrogram 🕨		
$\overline{\mathbb{O}}$	Polar diagram 🕨		Rotary knob 🕨
	(Real-time) cursor graph 🕨	ettan ettan ettan	Slide switch 🕨
Y	LED 🕨	Power	On/off switch ▶
	Video camera display 👂		LED array 🕨
	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.

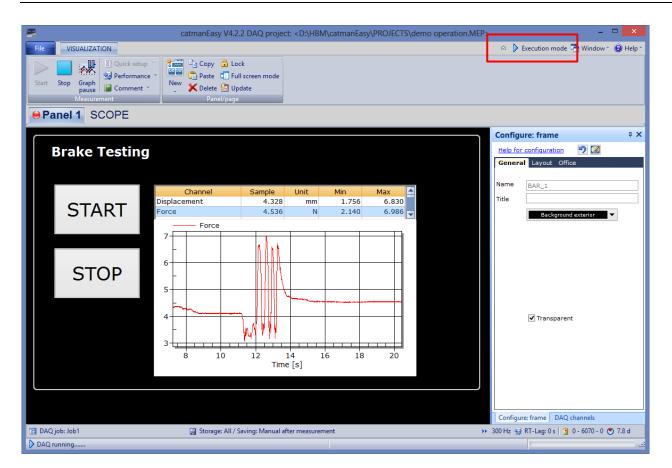


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Start Messurement Comment - Messurement Panel/page	
Alert DAQ job aborted with error! Details	×
ePanel 1 SCOPE	
Brake Testing I gital indicator Real-time graph I analog meter I arindicator I Table You can set an object as default in 'Options' -> 'Panels'	DAQ channels       # X         Image: Configure frame       # X840A Universal         Image: Configure frame       # Image: Configure frame         Image: Configure frame       Displacement         Image: Configure frame       Image: Configure frame         Image: Configure frame       Displacement         Image: Configure frame       DAQ channels
DAQ job: No DAQ job active	→ 3 S Additional
@ OK	

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.

<b></b>	catmanEasy V4.2.2	DAQ project: <	<d:\hbm\ca< th=""><th>tmanEas</th><th><b>APROJECTS</b></th><th>demo operation.</th><th>MEP&gt;</th><th></th><th></th><th></th></d:\hbm\ca<>	tmanEas	<b>APROJECTS</b>	demo operation.	MEP>			
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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.

<b>1</b>				catmanEasy V4.2	.2 DAQ project	: <d:\hbm\c< th=""><th>atmanEasy\P</th><th>ROJECTS\de</th><th>mo operation</th><th>n.MEP&gt;</th><th>-</th><th>- 🗆 🗙</th></d:\hbm\c<>	atmanEasy\P	ROJECTS\de	mo operation	n.MEP>	-	- 🗆 🗙
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		%000	)% (Test counte	er)								
		%Eve	ent% (Event/LIV	/ name)								
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		%Co	mment% (Test	parameter)								
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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.

	Options: System->Program start
System Program functions Safety Data storage Folders Program start Shortcuts CK22	<ul> <li>Show start screen</li> <li>Start mode</li> <li>Default start (startup screen)</li> <li>Execute first DAQ job automatically</li> <li>Switch visualization to full screen mode</li> <li>s waiting time before first hardware access</li> <li>Select the project which should be loaded on start of catmanEasy if start mode "Existing DAQ project" or "Existing analysis project" is selected or if settings are to be loaded from a project after device scan.</li> </ul>
Channels and sensors ■ DAQ channels ■ Channel list ③ Sensors ④ Zero balance ■ eDAQ	DAQ project     DAQ proje
Visualization Panels User interface Developer	Cod GUI extensions       Ribbon extensions       Default script       Load visualization       DAQ mode       Analysis mode
Help on options	Reset to default settings OK Cancel



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Settings			OK Cancel

Done – have fun operating QuantumX with an iPad.

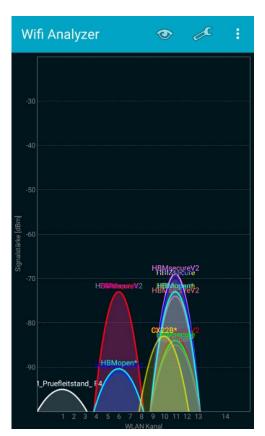




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## Troubleshooting

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**.



#### -- end

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