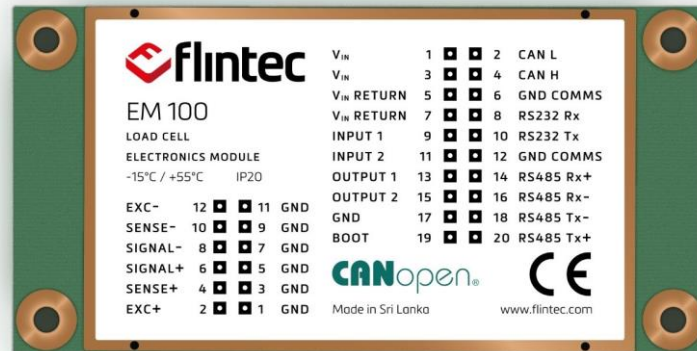


Flintec Device Configurator (FDC) Quick Start Guide.

EM100



TR2 - <https://www.flintec.com/electronics/digitising-units/tr2>

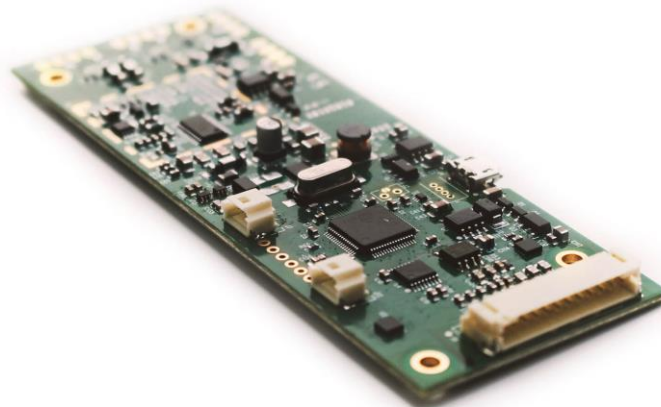


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1. Introduction

This Quick Start Guide will get you communicating with your EM100 or TR2 with a computer using the Flintec Device Configurator (**FDC**). (it does not show how to set up or calibrate)

The FDC is a Windows PC application that can communicate with a Flintec EM100 or TR2 electronics module over Serial RS232, RS485, USB-CDC (USB Communications Device Class) or CANbus.

Once communication is established a host of tabs will appear in the FDC allowing the user to calibrate, configure and monitor the connected device.

The FDC can support up to 4 devices at a time. On exiting the FDC it will retain the connection settings so when the application is opened at a later date the FDC will try and automatically connect to these devices.

1.1. Useful Documents

Doc. Number	Title
0087171	EM100 - FDC User Manual
0084290	EM100-A User Manual
0084292	EM100-C User Manual
0084293	EM100-F User Manual
0084291	EM100-G User Manual
0084789	TR2 Catalogue Text-Based Comms Spec
0087289	TR2 Catalogue CANbus Comms Spec

1.2. Glossary

Term	Description
FDC	Flintec Device Configurator
Computer	PC or Laptop
Device	EM100 or TR2
USB-CDC	USB Communications Device Class (Serial over USB)

1.3. FDC Features

- Communicate using Serial RS232, RS485, USB-CDC (USB Communications Device Class) or CANbus.
- Connect up to 4 devices at a time.
- Auto-Find feature to find devices connected.
- Calibrate, configure and monitor a connected device.
- Powerful chart feature allowing readings to be plotted on a chart in real time.
- Clone an EM100/TR2 by reading in settings from one device (or file) and writing to another device.
- Connections are saved on exiting the FDC. When the FDC is opened at a later date it will automatically try and connect to these devices

1.4. FDC Limitations

- Cannot mix device families.
The FDC cannot be set up to communicate with a mix of EM100s and TR2s at the same time.
- Cannot mix communication interfaces.
If the first device is connected as RS232 then all other devices must be connected as RS232. Same for RS485 and CAN.
- To change from one device family to another, or from one interface type to another, all connections must be deleted from the connections list and re-added as required.
- Real-time Chart.
The real-time chart tab is only available for interfaces that support data streaming. It is therefore not available if running the EM100 in RS485 half-duplex mode or the TR2 in CAN mode.
- CANbus users:
Only supports the USB-CANbus Adaptor from <https://www.peak-system.com>

The adaptor is the PCAN-USB opto-decoupled (IPEH-002022)

2. Hardware Required

2.1. General

- Windows computer running Windows7 or Windows10
- EM100 or TR2 module
- If using EM100 – an EM100 Adaptor Board to make connecting loadcell and communication cables easier (spring loaded sockets)
- Loadcell.
- DC PSU providing +9.6VDC to +32VDC

There are numerous ways to connect an EM100/TR2 device to a PC/Laptop. Below describes the interface and hardware required

2.2. If connecting via USB CDC

This is the easiest way to connect a device to a computer as the USB socket on the PC can connect direct to the USB socket on the EM100/TR2. It therefore only requires an easily obtainable USB 'A' Male to Micro 'B' cable.

Note: Due to USB limitations this is only practical if the Computer and EM100/TR2 are within a few metres of each other.



Figure 1 - USB 'A' Male to Micro 'B' cable

2.3. If connecting via RS232.

2.3.1. RS232 – PC fitted with serial port.

Some PC's still come with a 9 way 'D' Male (maybe marked OIO or IOIOI) RS232 serial ports.



Figure 2 - PC Serial Port (IOIO)

If you intend to use this port then all that's required is a connecting cable

2.3.2. RS232 - Computer up to 115200baud.

A USB-RS232 adaptor will be required.

Flintec has successfully used USB-RS232 adaptors from <https://easysync-ltd.com/>

Note: You can use any USB-RS232 adaptor you like.



Figure 3 - Easysync USB-RS232 Adaptor

Above shows just the one RS232 connection. Some of these adaptors support multiple RS232 connections which can be useful for multiple EM100s/TR2s.

2.3.3. RS232 - High Baud Rate. (PC and EM100 only)

If your intention is to run an EM100 at baud rates greater than 115200Baud (ie 230400 or 460800Baud) then a specialist PCI card will be required.

PCI cards for this purpose can be obtained from <https://www.sealevel.com/>

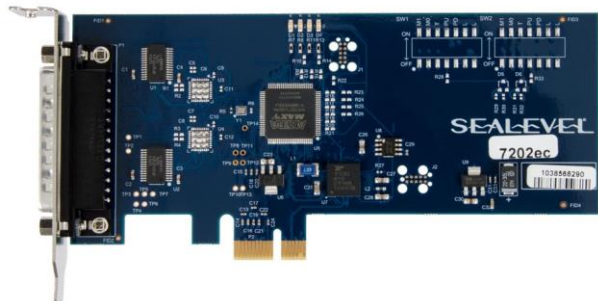


Figure 4 - Sealevel RS232 PCI card

Whichever method is used will still require a cable with 9way 'D' Female on one end and the ability to connect to the EM100 (or EM100 Adaptor Board) or TR2 at the other.

2.4. If connecting via RS485 Half-Duplex

Flintec has successfully used USB-RS485 adaptors from <https://easysync-ltd.com/>

Note: You can use any USB-RS485 adaptor you like.



Figure 5 - Easysync USB-RS485 Half-Duplex Adaptor

The other end of this cable has no connector, just bare wires.

2.5. If connecting via CANbus

Only supports the USB-CANbus Adaptor from <https://www.peak-system.com>

The adaptor is the PCAN-USB opto-decoupled (IPEH-002022)



Figure 6 - USB-PCAN Adaptor

A cable will be required from the adaptor 'D' type to the device (via 3 wires)

3. Third Party Software Required

The FDC requires the .NET Framework V4.5.2 installed to work. This is a pre-requisite when installing FDC and if this version is not on your PC it will be installed automatically.

However the USB-CDC, USB-RS232, USB-RS485 and USB-PCAN adaptors described above need device drivers to be installed BEFORE plugging the adaptor in.

Note: Only install the driver for the connection method you intend to use. If you don't intend using CAN there is no need to install the USB-PCAN driver etc.

3.1. USB-CDC Device Driver (Windows7 only)

Install STM32 Virtual COM Port Driver (STSW-STM32102)

This can be found with instructions at <https://www.st.com/en/development-tools/stsw-stm32102.html>

Note: Windows10 does not require this driver to be installed as it uses its own driver.

Connect the device to the computer by USB using the USB 'A' Male to Micro 'B' cable.

If the process above is successful the STMicroelectronics Virtual COM Port (COMx) should appear in Device Manager/Ports (COM & LPT).

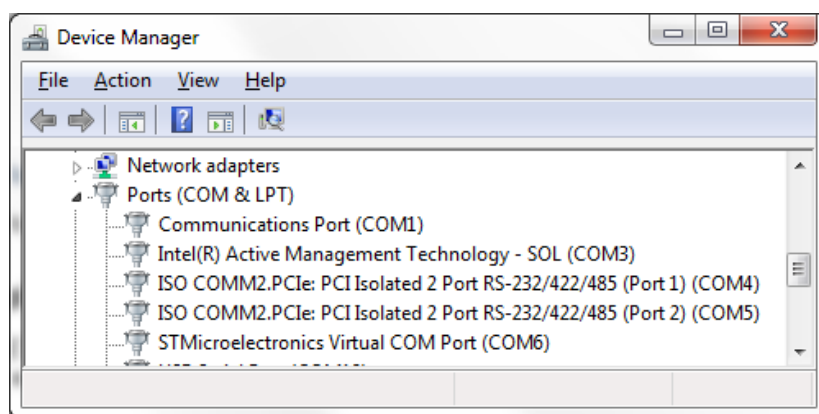


Figure 7 - ST Virtual COM Port displayed in Device Manager (Windows7)

Note: The two ISO COMM2.PCIe entries are a SeaLevel PCI card.

3.2. Easysync USB-R232 and USB-RS485 Device Drivers

As already mentioned you can use any USB-RS232 or USB-RS485 adaptor you see fit but since we're using the Easysync adaptors you can download the drivers and instructions from their website at <https://easysync-ltd.com/>

Once the drivers are installed plug the adaptor in and it should appear in Device Manager as a USB Serial Port (COMx)

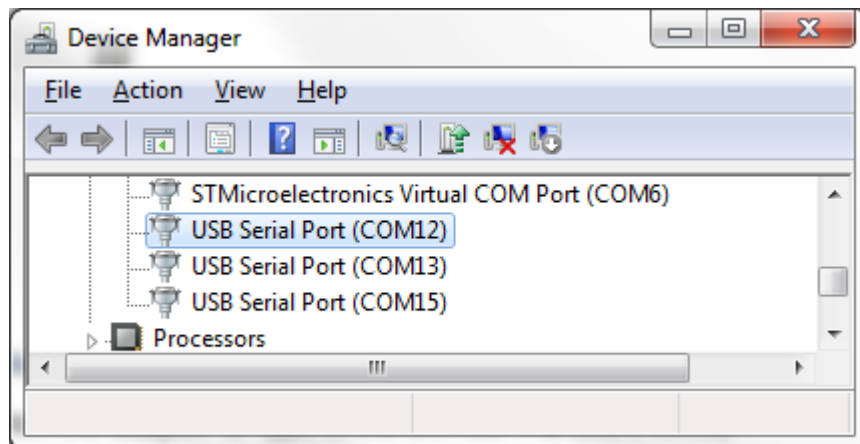


Figure 8 - three USB Serial Port Easysync adaptors displayed in Device Manager (Windows7)

On this set-up COM12 and COM13 are RS232 ports and COM15 is an RS485 port.

4. Install the FDC

With the required hardware connection decided and necessary drivers installed its now time to download the FDC from the Flintec website.

Go to the link below and click on **Flintec Device Configurator**

<https://www.flintec.com/electronics/digitising-units/tr2>

Downloads

Datasheet



Flintec Device Configurator



Figure 9 - FDC link on website

When the FDC has been downloaded, open up the location where the file is saved. Since the FDC application is in a zip file, double click the zip file and browse the zip file until finding the Flintec_Device_Configurator_0088565.exe file (FDC app) as seen below:-

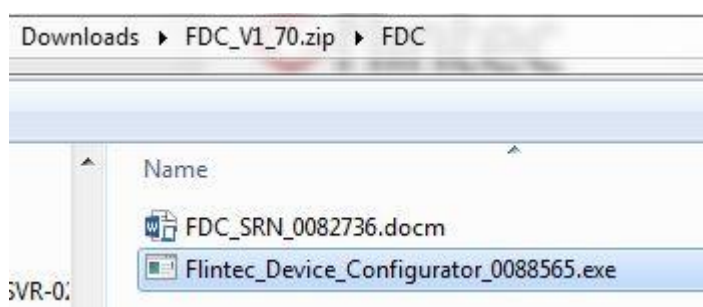
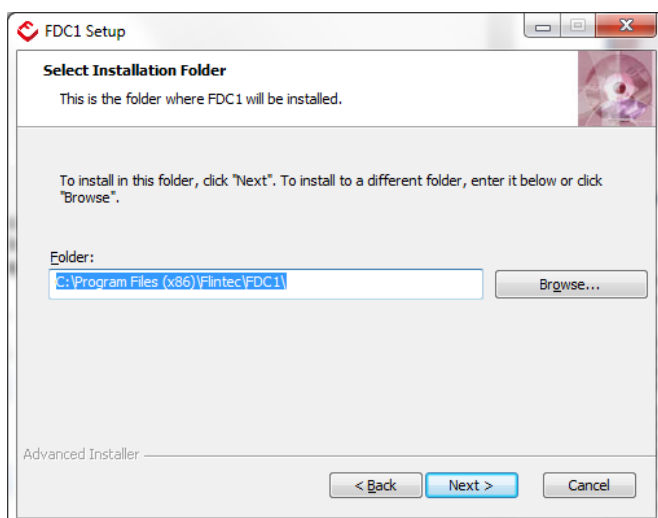
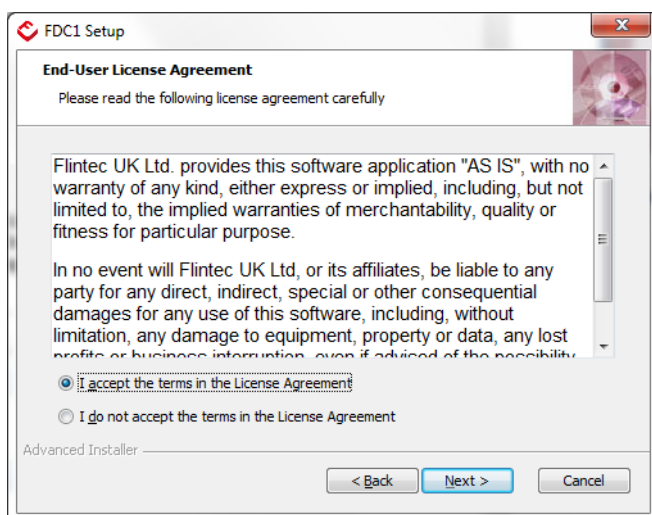
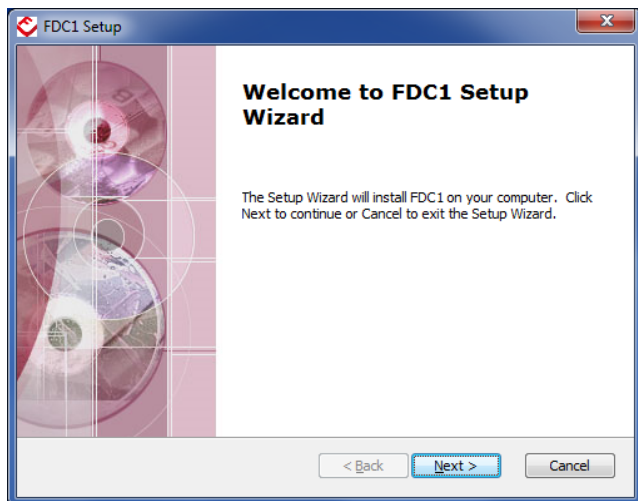


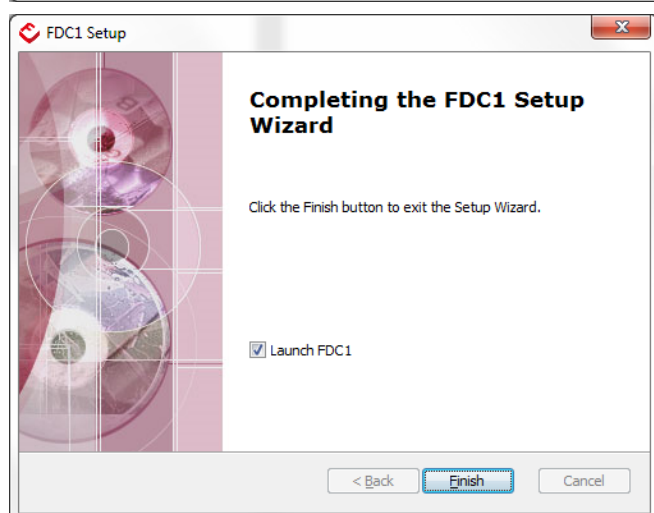
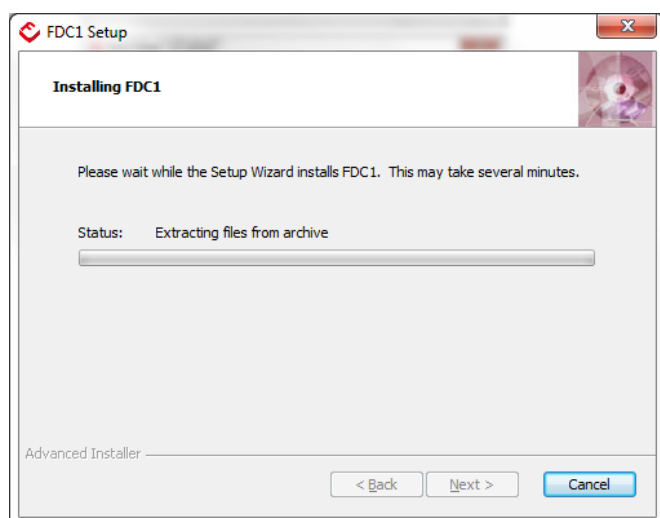
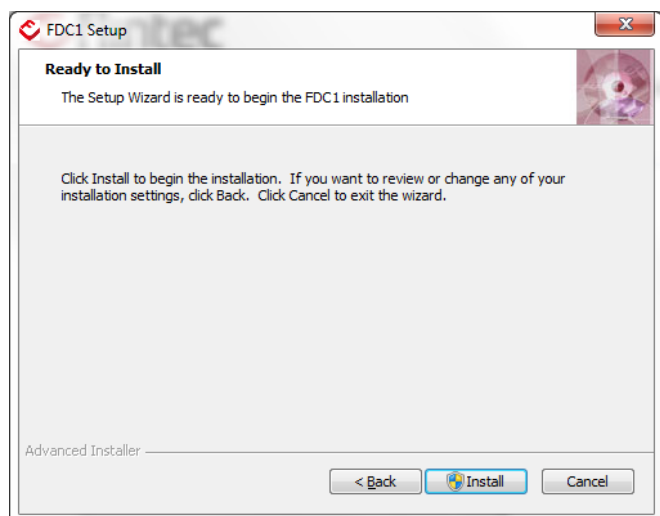
Figure 10 - FDC application as stored in zip file

Right-click the FDC app and select Copy. Paste it to your desktop or location of your choice.

Double-Click the file to start the installation process:-

4.1. FDC installation steps





If you're ready to start using the FDC with an EM100 or TR2 then press Finish to launch the app.

5. Connecting the FDC to an EM100

With the FDC launched and no EM100 connected, only the Connections tab is available.

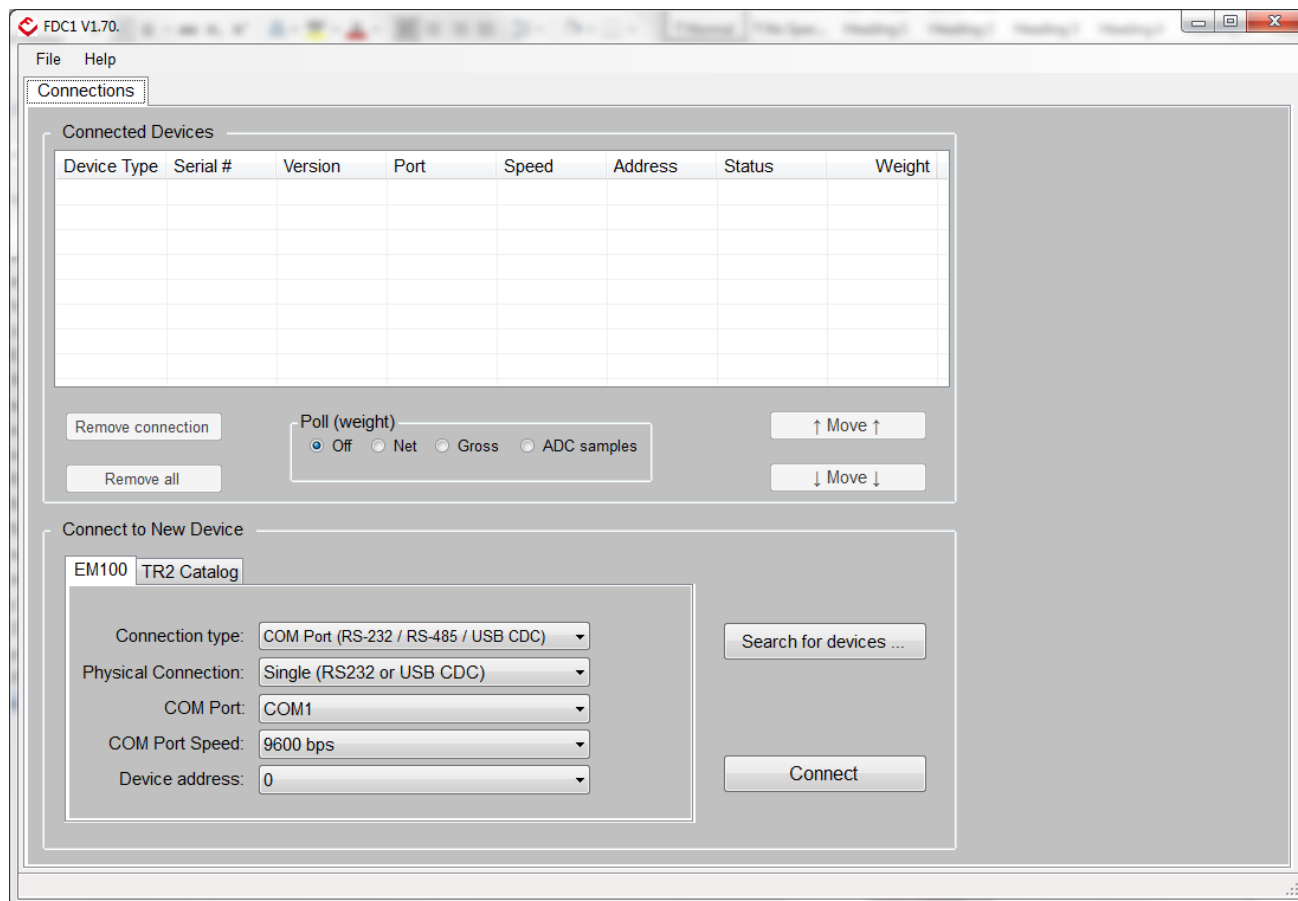


Figure 11- FDC launched and ready to accept connections to EM100s

5.1. Connect using the USB-CDC

As this is only a Quick Start guide, the simplest way to connect a computer to an EM100 is by USB-CDC as this only requires a USB 'A' Male to Micro 'B' cable which most users are likely to have handy.

Note: If using Windows 7 ensure the STM32 Virtual COM Port Driver has been installed first.

5.2. Hardware prerequisites

- The EM100 is connected to a DC power supply.
- The EM100 is connected to a computer by USB 'A' Male to Micro 'B' cable.
- Not necessary for connection but useful - a loadcell or loadcell simulator is connected.

5.3. Connect first device over USB-CDC

On the EM100 tab select

- **Connection type:** Com Port (RS-232 / RS-485 / USB CDC)
- **Physical Connection:** Single (RS-232 or USB CDC)
- **COM Port:** Select the Com Port where the STM32 Virtual COM Port Driver is installed (check Device Manager – Ports (COM and LPT))
- **COM Port Speed:** Leave at default 9600 bps
- **Device address:** Leave at default 0

Press the **[Connect]** button. The device appears in the 'Connect Devices' list as shown below.

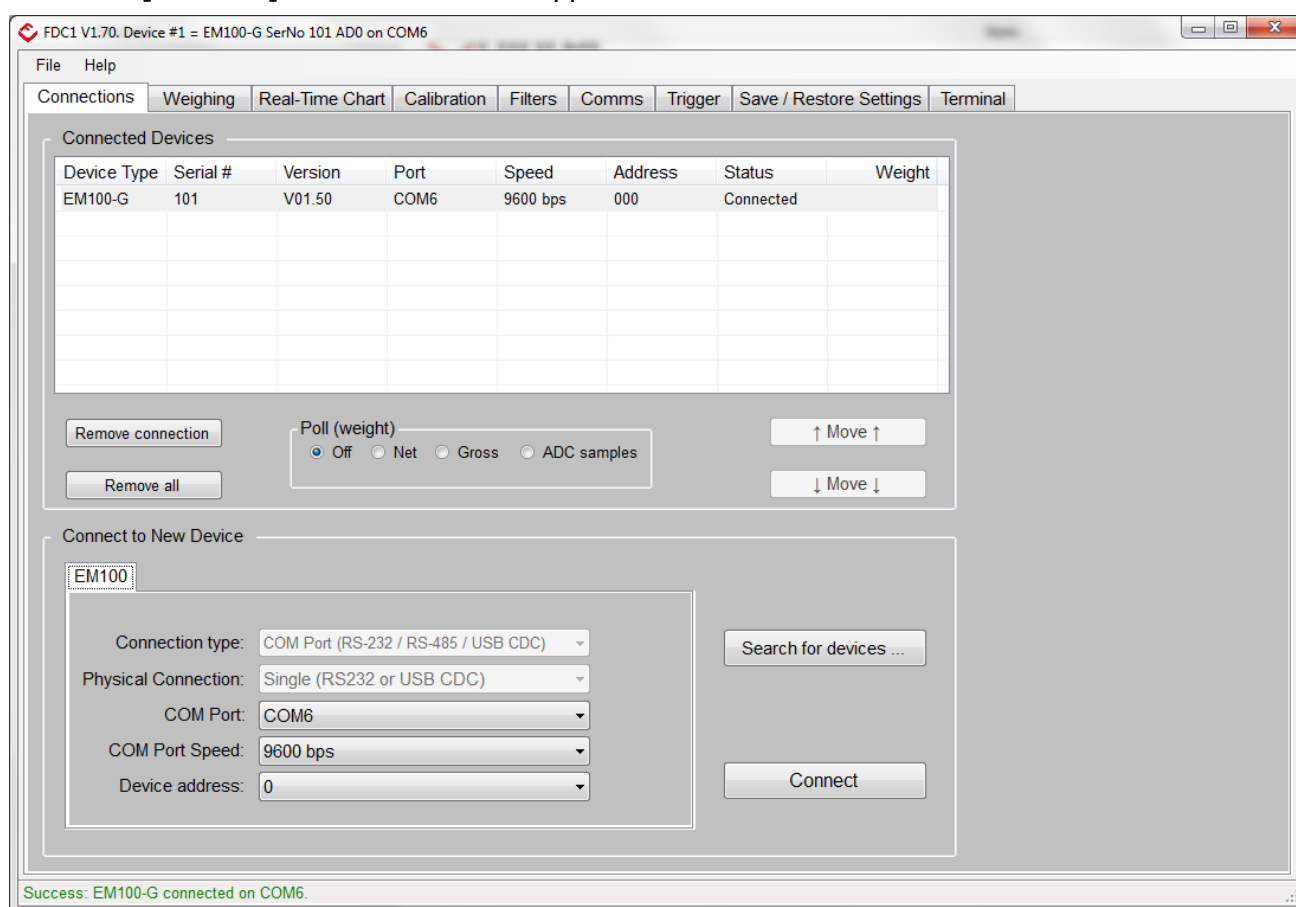


Figure 12 - EM100 shown connected

5.4. Points to note

At this stage its important to note:-

- The TR2 tab has disappeared so only additional EM100's can be connected.
- More tabs have been activated allowing the EM100 to be calibrated etc.
- The EM100 highlighted in the Connected Devices also appears in the title bar at the top. This will be the EM100 that will be set-up and calibrated
- More EM100's can only be connected on different COM Ports.
- If you wish to connect by CAN or change to TR2, all connections have to be removed from the Connected Devices list.
- A maximum of 4 EM100's are allowed.

5.5. Tab description

- **Weighing** – A simple weighing screen allowing the user to Tare, Zero etc.
- **Real-Time Chart** – Powerful chart feature allowing readings to be charted in real-time.
- **Calibration** – Calibrate the EM100, set the number of decimal points, max and min weights etc.
- **Filters** – Set the filter according to your needs. If wishing to stream weight readings continuously then the number of samples can be set too.
- **Comms** – Configure the serial baudrate or CAN bitrate. Set the EM100 address if device is being used on an RS485 or CANbus
- **Trigger** – Set trigger points or set points to switch on/off the 2 digital outputs.
- **Save / Restore Settings** – Set up one EM100 and save the settings to another EM100 or file.
- **Terminal** – Send and receive data or settings using a terminal. Useful for fault-finding or sending commands not supported on the tabs.

The number of tabs that appear are dependent on the EM100 model so your screen may look different. For instance the EM100-F model has a Filling tab.

6. Connecting the FDC to a TR2

With the FDC launched and no TR2 connected, only the Connections tab is available.

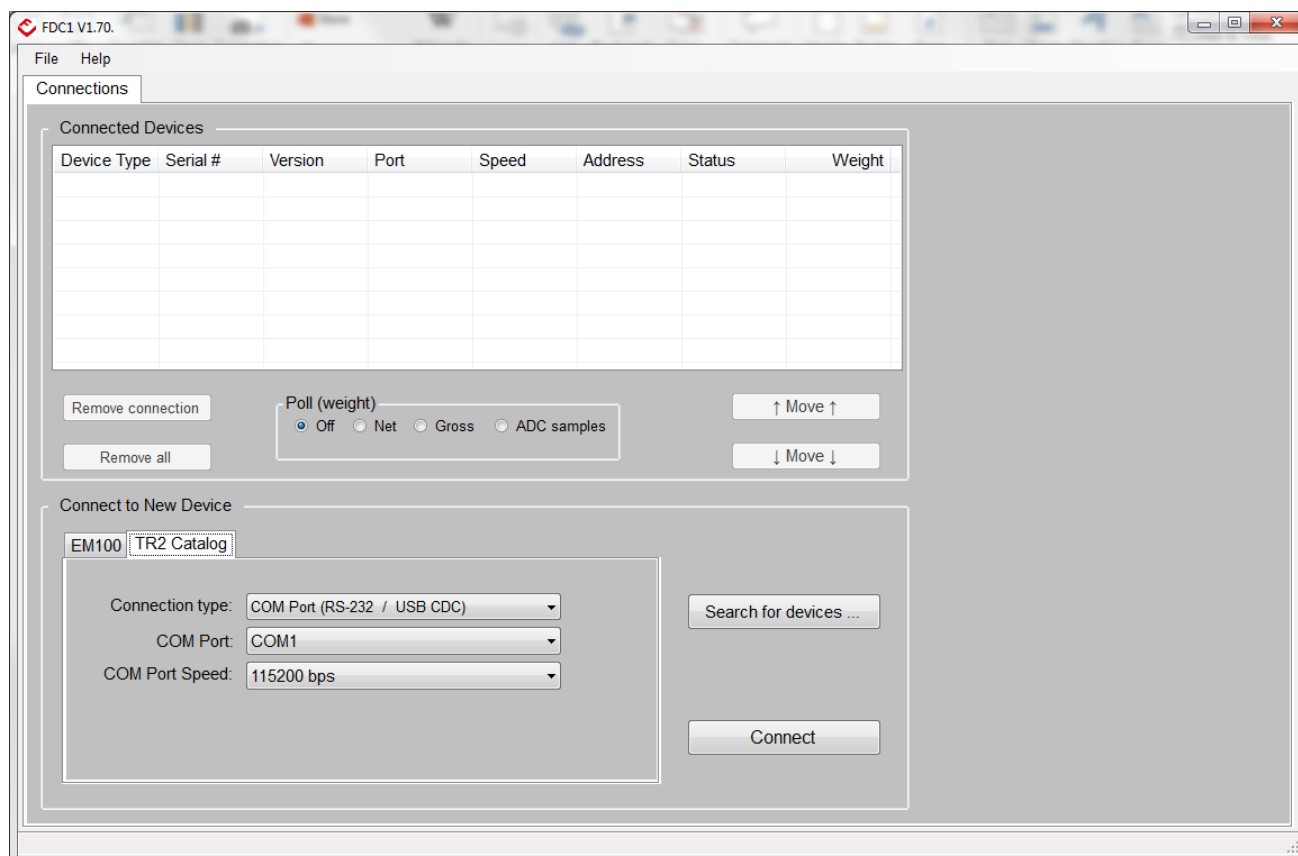


Figure 13 - FDC launched and ready to accept connections to TR2s

6.1. Connect using the USB-CDC

As this is only a Quick Start guide, the simplest way to connect a computer to a TR2 is by USB-CDC as this only requires a USB 'A' Male to Micro 'B' cable which most users are likely to have handy.

Note: If using Windows 7 ensure the STM32 Virtual COM Port Driver has been installed first.

6.2. Hardware prerequisites

- The TR2 is connected to a DC power supply.
- The TR2 is connected to a computer by USB 'A' Male to Micro 'B' cable.
- Not necessary for connection but useful - a loadcell or loadcell simulator is connected.

6.3. Connect first device over USB-CDC

On the TR2 tab select

- **Connection type:** Com Port (RS-232 / RS-485 / USB CDC)
- **COM Port:** Select the Com Port where the STM32 Virtual COM Port Driver is installed (check Device Manager – Ports (COM and LPT))
- **COM Port Speed:** Leave at default 115200 bps

Press the **[Connect]** button. The device appears in the 'Connect Devices' list as shown below.

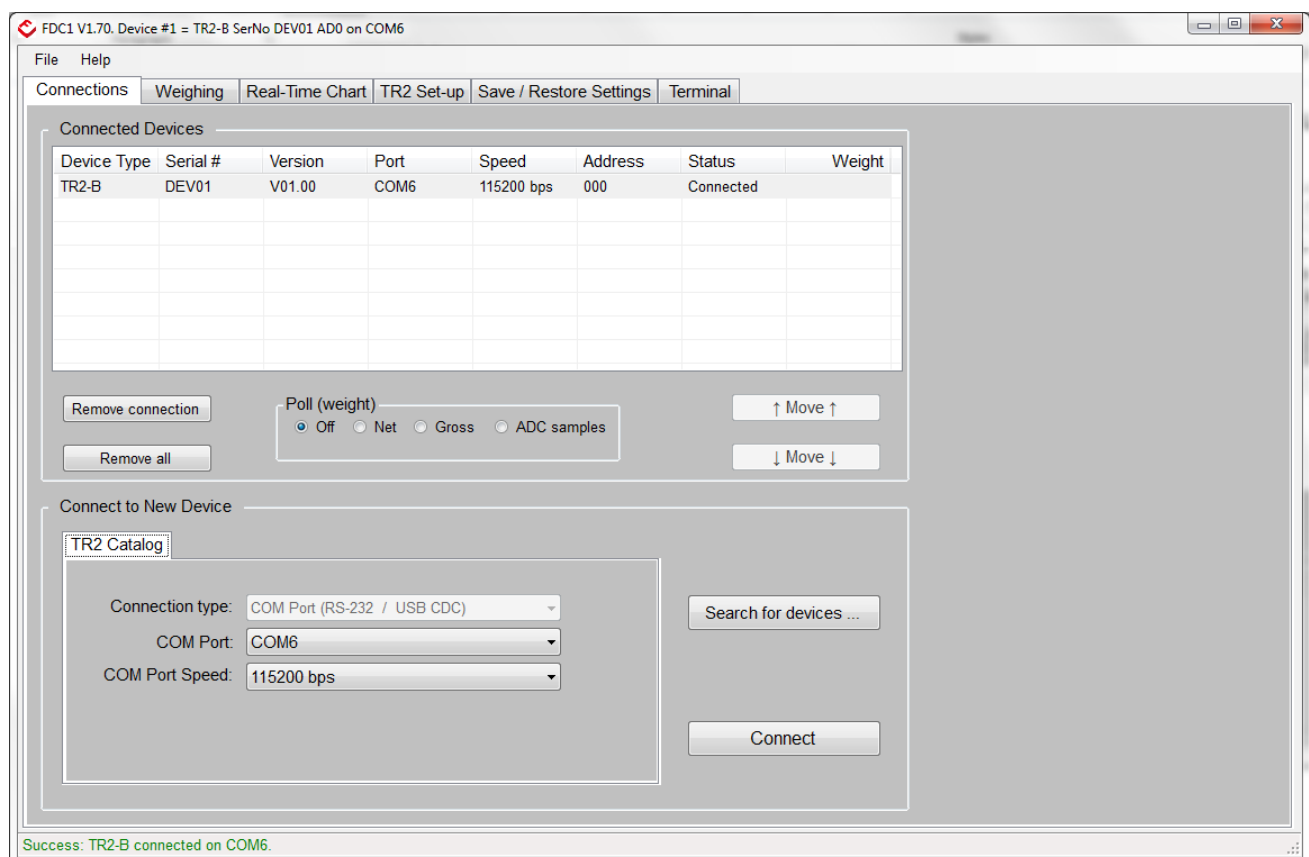


Figure 14 - TR2 shown connected

6.4. Points to note

At this stage its important to note:-

- The EM100 tab has disappeared so only additional TR2's can be connected.
- More tabs have been activated allowing the TR2 to be set-up and calibrated.
- The TR2 highlighted in the Connected Devices also appears in the title bar at the top. This will be the TR2 that will be set-up and calibrated.
- More TR2's can only be connected on different COM Ports.
- If you wish to connect by CAN or change to EM100, all connections have to be removed from the Connected Devices list.
- A maximum of 4 TR2's are allowed.

6.5. Tab description

- **Weighing** – A simple weighing screen allowing the user to Tare, Zero etc.
- **Real-Time Chart** – Powerful chart feature allowing readings to be charted in real-time.
- **TR2 Set-up** – Set-up and calibrate the TR2.
Note: The TR2 has far less settings than the EM100 allowing for everything to be done on one tab.
- **Save / Restore Settings** – Set up one TR2 and save the settings to another TR2 or file.
- **Terminal** – Send and receive data or settings using a terminal. Useful for fault-finding or sending commands not supported on the tabs.