



Frequently Asked Questions

Can I buy N-FRM Sampler batteries and battery charger Internationally?

Yes, our batteries and battery charger are made by DeWalt. The reason we chose DeWalt is that they are very efficient batteries and they can easily be sourced internationally.

DeWalt 20V Max/18V 5 Ah Batteries – DCB 205

DeWalt 20V Max/18V Charger (240V) – DCB 105

DeWalt 20V Max/18V Charger (120V) – DCB 101 or DCB 115 or DCB 102 (dual)

We stock the DCB 205 batteries, and the 120V DCB 102 dual charger.

What size tripod can be used?

Shipping tripods internationally can be very expensive because of their larger size. Tripods with a 35mm Diameter post work well with our Sampler. We have found speaker stand tripods used by musicians to be a very sturdy, effective, and affordable option, that are usually available locally.

What type of filter media do you recommend? Do you sell these?

Currently we do not sell filter media. The N-FRM Sampler is designed to use the filters specified by the US-EPA Federal Reference Method for PM-2.5 sampling. There is also a variety of 47mm filter media available, for specific analytical requirements. These types of filters work best...

- 2 um PTFE Teflon Filter w/ support ring – Recommended if chemical analysis for non-carbon-based compounds will follow gravimetric analysis. ***If you will be running samplers on battery power, we recommend the PALL Teflo Filters (#R2PJ047) as they have a low resistance and will maintain battery charge beyond 24 hours.***
- Teflon-Coated Glass Filter – Ideal for gravimetric analysis.
- Pure Quartz Filter – Recommended if chemical analysis for carbon based compounds will follow gravimetric analysis.

For the sampler to maintain flow and run efficiently, use filters with a maximum pressure drop (with a clean filter) of 30 cm H²O column @ 16.67 LPM clean air flow.

Can the N-FRM Sampler run in high humidity?

Yes, we have had samplers in 90-100% humidity and haven't had any problems. The only issue would be if the atmosphere is condensing, then the water would blind off the filter. Teflon coated glass fiber filters work well in high humidity. Freezing fog can also blind off the sampling media.

Can the N-FRM Sampler run under high barometric pressure conditions, such as in mines?

The sampler is designed to take real-time measurements from sensors and adjust to maintain the designated flow rate. Our barometric pressure sensor goes out of range at 500m depth but we do have an option on our sampler to turn off any sensor and manually enter a default value. The user can easily turn off the barometric pressure sensor in the SYSTEM SETUP menu and manually enter the value each day using an external barometer.

Can you sample for Cr6+?

We now offer a Cr6+ “candy cane” adaptor that fits directly on our sampler. We do not sell the method specific filter holders or glass funnels. Our pump can easily be adjusted to run at 15 LPM in the SYSTEM SETUP menu for Cr6+ sampling.

Can US EPA standard inlets and cyclones be used on the N-FRM Sampler?

Our inlets are designed to be more compact versions of the US EPA standard inlets, in order to make it lighter and easier to transport to remote locations. But if you would prefer to use US EPA standard inlets, they will fit on our filter holder and inlet.

Our inlets and cyclones are not US EPA certified.

Does the PEET wind sensor need to be calibrated?

The wind sensor we use is manufactured by Peet Bros. We expect the air sampler would rarely be deployed in a location that would meet standard meteorological siting criteria and most users utilize the wind data as supplemental information to the particulate sampling. Theoretically, quality control of the wind sensor could be done in a microscale location by collocating a reference instrument.

Most wind sensors are calibrated in a controlled wind tunnel. It would be difficult to re-calibrate wind sensors accurately in the field.

Do I need to send my FTS Calibrator back to ARA to have it re-calibrated?

While we are always available to perform calibration services, this is not always the best option for our users, especially internationally. The FTS Calibrator can be re-calibrated in a local lab with a high accuracy flow standard.

What type of testing has been done on the N-FRM Sampler? How accurate is it?

The N-FRM Sampler was tested alongside an FRM Sampler for 69 days by Lane Regional Air Protection Agency (LRAPA) in Springfield, Oregon and by South Coast Air Quality Management District in Diamond Bar, California. The data found a Slope(m) of .986, a correlation (r) value of .9994 and 3.7% relative precision. The testing details and data are available on request.

I can't view the CSV data file on my computer. What is the problem?

The CSV file that is generated from the sampler uses a “,” to separate fields, which is standard in the US. In Europe and other countries, the standard is a “;” to separate fields. If you are using Microsoft Windows, this is most likely the problem. You can fix this issue in two ways...

1. In the **Control Panel** on your computer, select **Regional and Language** setting. Select **Additional Settings**. In the **Numbers** tab, select “.” for **Decimal Symbol** and “,” for **List Separator**.
2. In the text file (open in notepad or other editor), add a line of code to the top of the CSV file to tell Excel what the list separator is. Add **sep=**, to the top line and save the file.

How do you calibrate the RTP real-time particulate values?

The N-FRM Sampler comes with default mass values for PM2.5 and PM10 particulates. Users can adjust these values proportionally to match their local aerosol characteristics, which can greatly improve accuracy.

Adjustments can be made by calculating a new default mass value for PM2.5 or PM10:

1. Perform a standard PM2.5 (or PM10) 24-hour sample run, while simultaneously running the RTP Profiler.
2. On the data output file, determine the PM2.5 Average by calculating the average of all 5-minute data in the PM2.5 column.
3. Determine the correction factor:

$$\text{Correction Factor} = \frac{\text{Filter Method Concentration } (\mu\text{g}/\text{m}^3)}{\text{Sensor PM2.5 Average } (\mu\text{g}/\text{m}^3)}$$

4. On the sampler, select **SETUP** from the Home Screen. Select **SYSTEM SETUP**, scroll down, and select **PARTICLE COUNTER**. The default mass values can be adjusted under **PM2.5M** and **PM10M**. (Note: The default nominal mass value is 4 for **PM2.5M** and 64 for **PM10M**)
5. Determine the new PM2.5M Conversion Value:

$$\text{PM2.5M Conversion Value} = \text{Correction Factor} * \text{Current PM2.5M Conversion Value}$$

6. Highlight and select **PM2.5M** on the Sampler and enter the new PM2.5M Conversion Value.

To improve accuracy:

- Use a data set with PM2.5 concentrations greater than 10 $\mu\text{g}/\text{m}^3$.
- Avoid using data below the sensor's limit of sensitivity (P1=0).
- Repeat this process using multiple sample runs.

The batteries won't charge. How can I revive them?

Usually this is the result of leaving the sampler power switch on with batteries installed for over a week. When not collecting a sample, the sampler still draws a small amount of current from the battery while waiting for input. If left long enough it will drain the batteries to a level that the Dewalt "smart" charger will not recognize them as chargeable. It is similar to parking your car and leaving the key "on".

Sometimes the batteries will rebound to a chargeable state on their own. If they don't, you can add voltage using a small 12VDC power supply. The "+" and "-" terminals are labeled on the underside of the batteries. Usually just a few minutes is all that is required to get the battery voltage up to where the Dewalt charger will recognize and charge the battery.

We are working on a permanent fix for this issue and will have a revised battery PCB as soon as possible.