TELEMARK

MODEL 861 DEPOSITION CONTROL SOFTWARE

INSTRUCTION MANUAL

Manual Rev 1.0.0 August 2023

telemark.com

Current version of this manual can be found at
https://telemark.com/quartz-crystal-control/861-deposition-controller/

WARRANTY

Telemark products are warranted to be free of defects in materials and/or workmanship for a period of 12 months after shipment from the Telemark factory. This warranty is valid only for normal use, where regular maintenance has been performed. This warranty shall not apply if the product has been repaired or alterations made by anyone other than authorized Telemark service representatives, or if a malfunction or damage occurs through abuse, misuse, negligence, shipping damage, or other accident. No charge will be made for repairs covered by this warranty at a Telemark service facility. Telemark reserves the right to determine if the malfunction was caused by defective materials or workmanship. The customer will be responsible for freight charges to Telemark's service facility.

USER RESPONSIBILITY

The user is responsible for proper operation and ordinary maintenance of the equipment, following procedures described in this manual, including reference documents. Proper operation includes timely replacement of parts that are missing, broken or plainly worn. If the user has a reasonable doubt about understanding the use or installation of a component, Telemark Technical Service should be called.

It is vitally important that the user properly installs the equipment as described in this manual. The warranty will be void if the equipment is improperly installed.

Alteration of the design or any function of the equipment voids the warranty and is entirely the responsibility of the user.

SAFETY WARNING

General Precautions: High (potentially lethal) voltages are present within deposition systems. Great care must be exercised when performing maintenance. Human contact with the voltages can be fatal.

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1 SYSTEM REQUIREMENTS

The Deposition Control Manager (DCM) Software has the following requirements:

- Windows 7 or newer PC computer with one of the following options:
  1- USB port with USB drive.
  2- RS-232 port or USB port with a RS-232 adaptor. Null modem cable that is shipped with the 861 Deposition controller.
  3- Ethernet connection to the 861 with a crossover cable or with a hub/router.
- 861 Deposition controller.

The DCM software is supplied on the USB drive that comes with the 861 Deposition controller.

For computers that you wish to use that do not have a RS-232 port, a USB to RS232 adaptor is needed. One choice is the Startech part number ICUSB232PRO. It has a static COM port number that makes it easy to connect after a computer reboot.

2 SOFTWARE INSTALLATION

Install from the USB drive folder

\Software\851-861\861DCMRelease

The program setup.exe

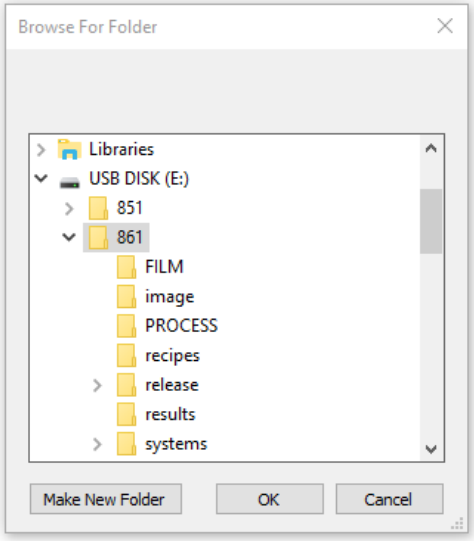
Note: previous versions should be uninstalled first

The program will be in the Telemark folder on the Start menu

3 OPERATION

3.1 Required components

The DCM software can be used with a USB drive or with RS-232. When the software is started it first asks for the working directory location. This location can be on a computer hard drive or on the USB drive that will transfer data to the 861. To transfer data to the 861 the working directory must be in the \861 folder.



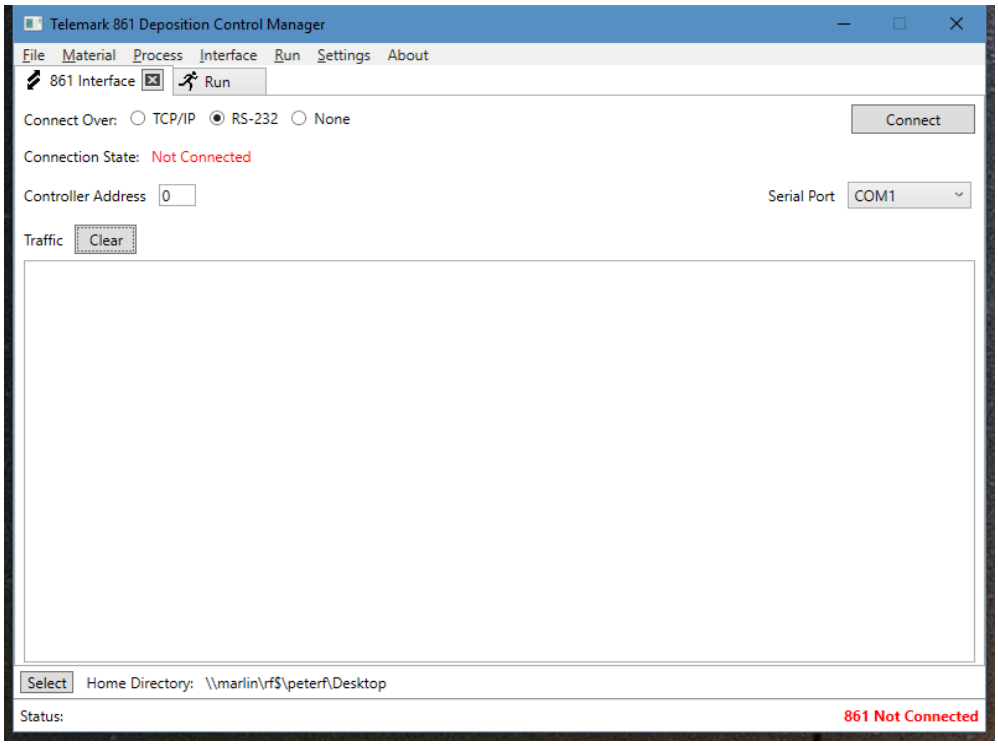
3.2 Interface

To access the 861 directly the RS-232 port must be connected.

1. Set Controller Address, default is 1.

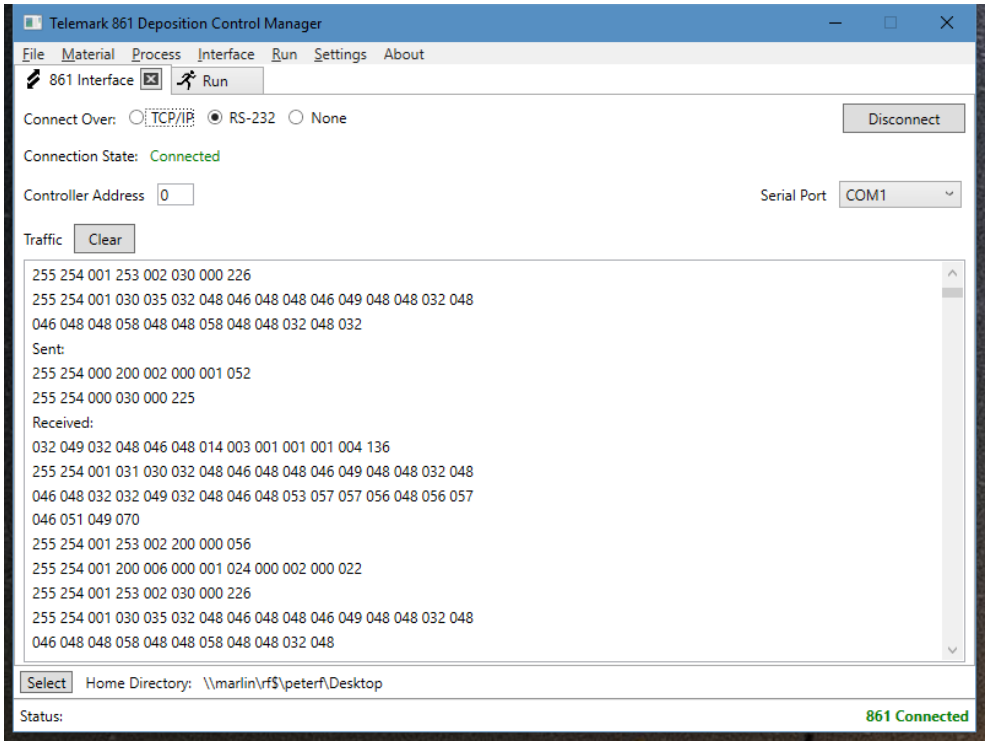
2. Select Serial Port.
3. Press the connect button.

For an Ethernet connection the 861 must be connected to the Windows computer with a crossover cable or with a hub/router. The 861 IP address must be entered.



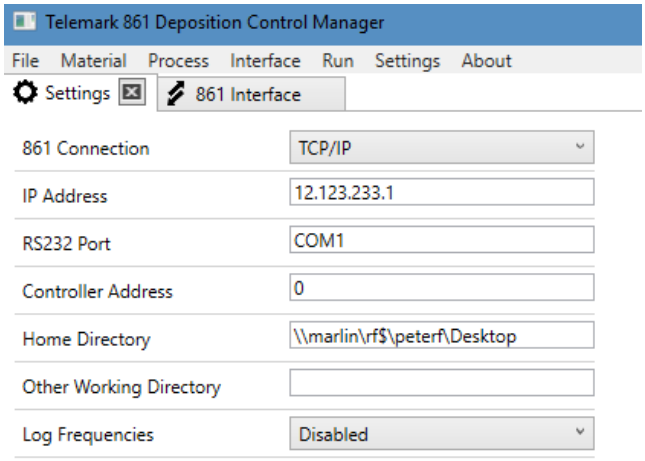
Numbers will appear on the screen. When finished it will report at the bottom the connection state and the Status. It should say “Finished downloading process list from 861” if not it will say “Unable to communicate with 861.”

When the program is closed and restarted it will try to reconnect automatically with the 861 using the same settings from the last time it was used.



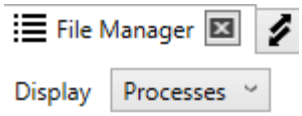
3.3 Settings

The Settings tab controls the RS-232 or Ethernet connection, Directories, and if Frequencies are recorded in the results text files that are automatedly generated in the RESULTS folder in the working directory.

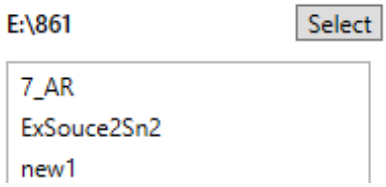


3.4 File Manager

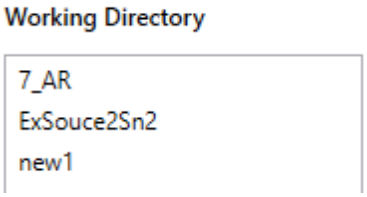
First select the display of Process or Material



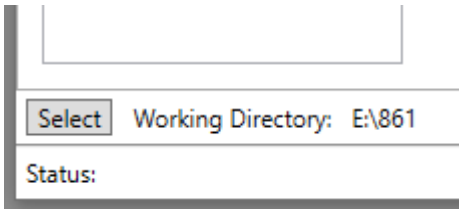
The file manager has three columns of Process or Material locations. The first column usually used for saving files on a computer hard disk. The Select button is used to change the location. The first column is not shown if not directory is selected.



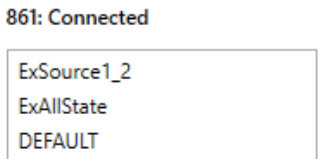
The second column is the Working Directory.



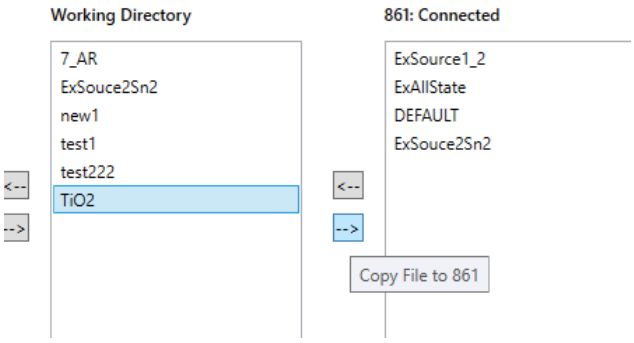
The working directory is set when the program is started. It can be changed at any time by pressing the Select button next to the Working Directory location



The third column is active when the RS232 link to an 861 is made then it will show “Connected”. The third column is not shown when the 861 is not connected.



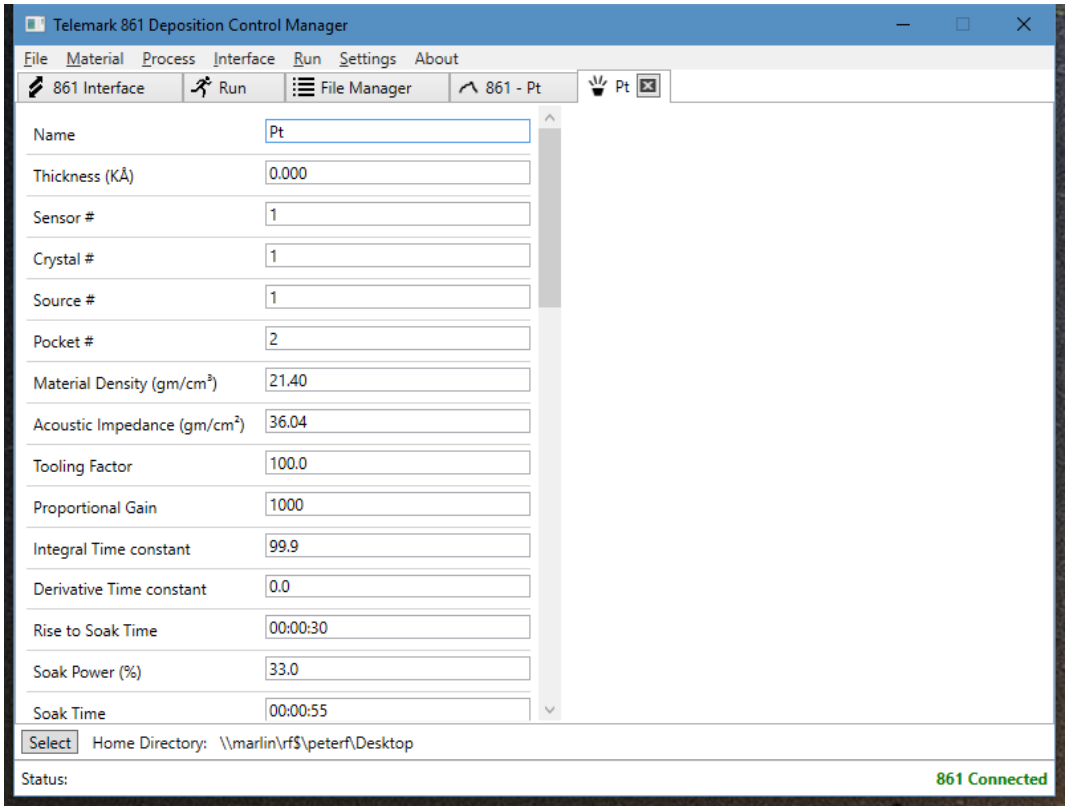
To transfer files click on one or more (hold the shift key to select multiple files) and click on the arrow to move the direction you want.



Process and materials can be edited by double clicking.

3.5 Material Edit

Materials can be edited in the material screen. Use the scroll bar or tap to navigate.

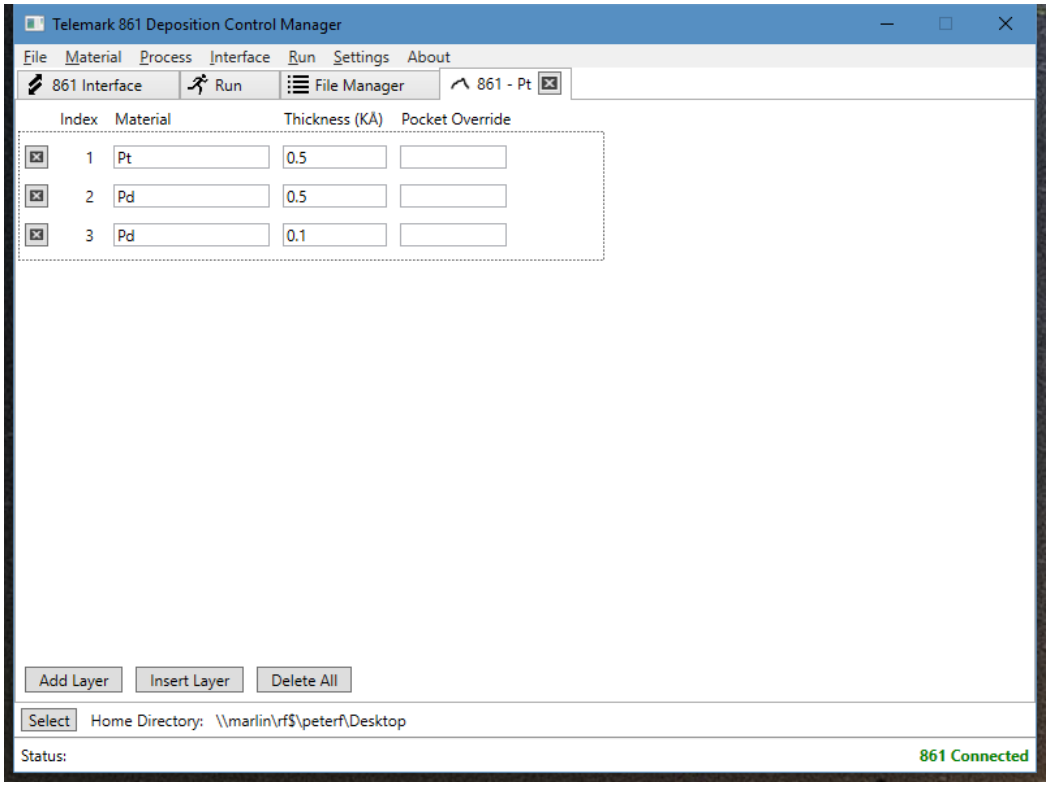


3.6 Process Edit

Processes can be edited in the process screen. “Add Layer” will add a new layer after the last layer. “Insert Layer” will add a new layer above the current layer

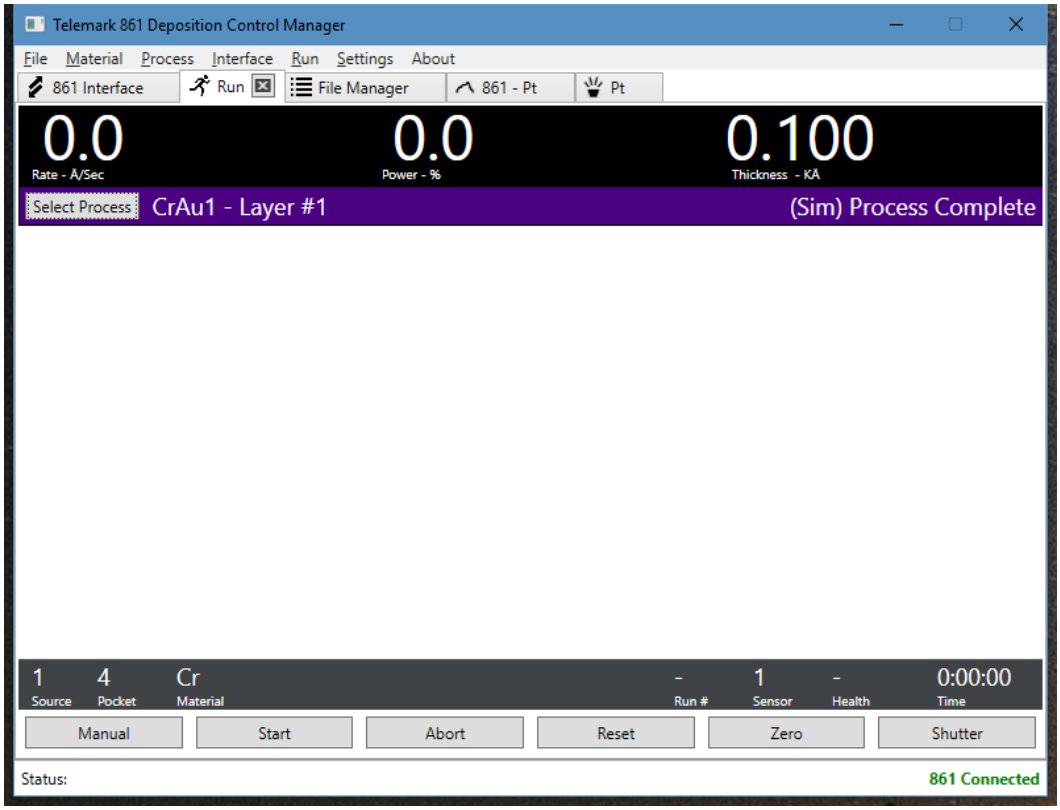
where the curser is. ”Delete All” will clear all layers. The X box to the right of the layer number will delete the layer.

“Pocket Override” is only filled in if you want to override the pocket number that is stored in the material.



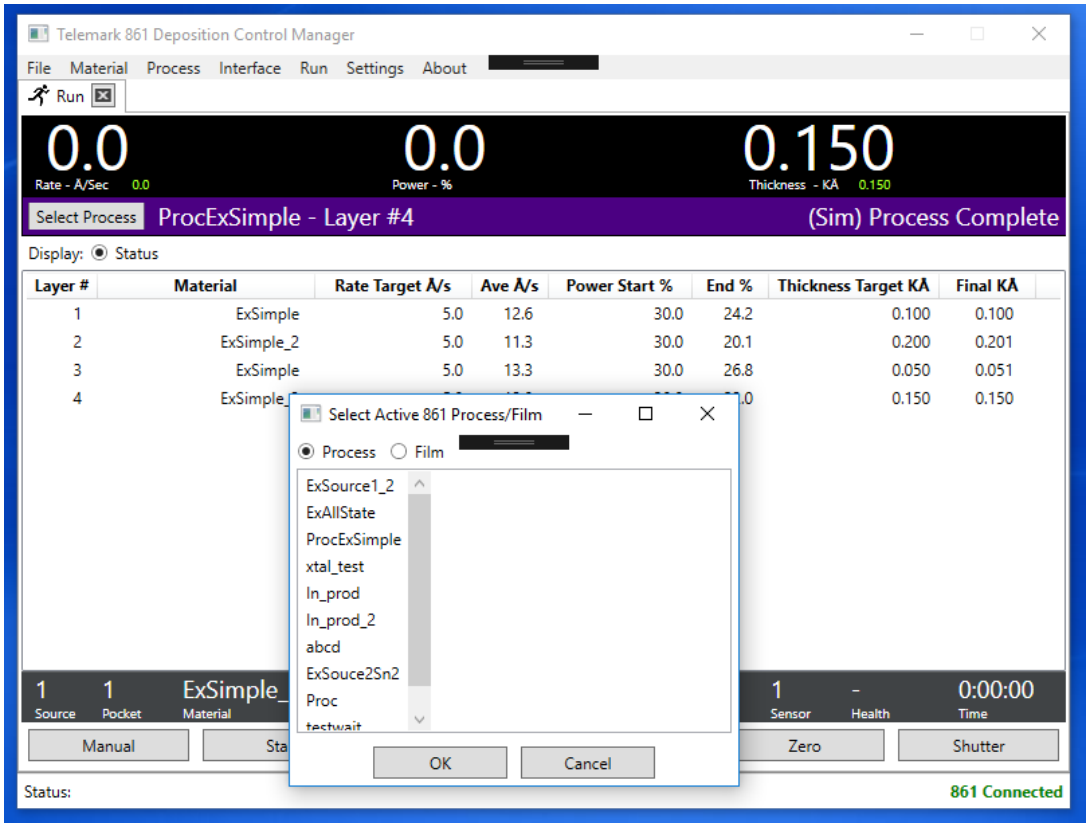
3.7 Run

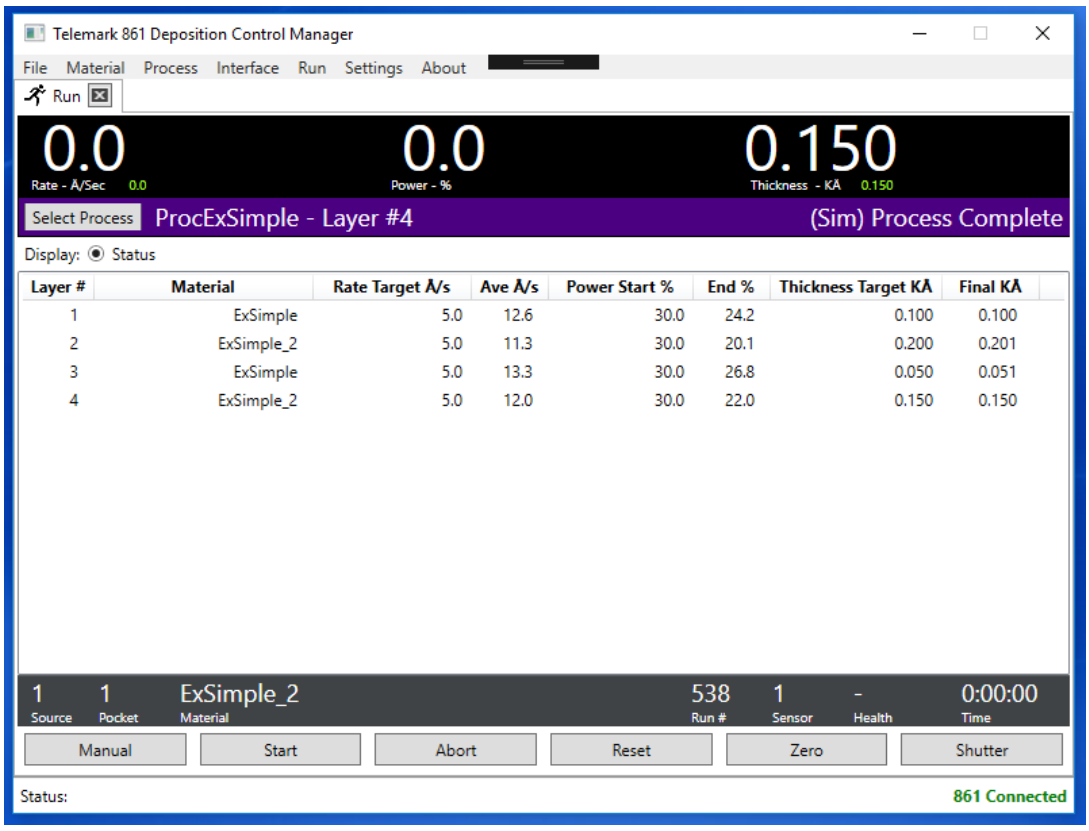
After the DCM is connected to the 861 the Run screen can be used. A process or film can be selected. The six buttons from the 861 touchscreen can be pressed on the bottom of the screen.



Press the “Select Process” button to bring up the Process/Film list. Select a Process or Film and press OK. All the layers will be loaded on the screen with the Layer number, Material, and Thickness Target.

Press Start and the process will start. As each layer is finished the Rate, Power and Final KA will be displayed.


Telemark 861 Deposition Control Manager
File Material Process Interface Run Settings About
Run
0.0
Rate - Å/Sec 0.0
0.0
Power - %
0.150
Thickness - KÅ 0.150
Select Process
ProcExSimple - Layer #4
(Sim) Process Complete
Display: Status
Layer # Material Rate Target Å/s Ave Å/s Power Start % End % Thickness Target KÅ Final KÅ
1 ExSimple 5.0 12.6 30.0 24.2 0.100 0.100
2 ExSimple_2 5.0 11.3 30.0 20.1 0.200 0.201
3 ExSimple 5.0 13.3 30.0 26.8 0.050 0.051
4 ExSimple_ 0.150 0.150
Select Active 861 Process/Film
Process Film
ExSource1_2
ExAllState
ProcExSimple
xtal_test
In_prod
In_prod_2
abcd
ExSouce2Sn2
Proc
testwait
OK
Cancel
1 Source
1 Pocket
ExSimple_ Material
1 Sensor
- Health
0:00:00 Time
Manual
Zero
Shutter
Status:
861 Connected


Telemark 861 Deposition Control Manager
File Material Process Interface Run Settings About
Run
0.0
Rate - Å/Sec 0.0
0.0
Power - %
0.150
Thickness - KÅ 0.150
Select Process
ProcExSimple - Layer #4
(Sim) Process Complete
Display: Status
Layer # Material Rate Target Å/s Ave Å/s Power Start % End % Thickness Target KÅ Final KÅ
1 ExSimple 5.0 12.6 30.0 24.2 0.100 0.100
2 ExSimple_2 5.0 11.3 30.0 20.1 0.200 0.201
3 ExSimple 5.0 13.3 30.0 26.8 0.050 0.051
4 ExSimple_2 5.0 12.0 30.0 22.0 0.150 0.150
1 Source
1 Pocket
ExSimple_2 Material
538 Run #
1 Sensor
- Health
0:00:00 Time
Manual
Start
Abort
Reset
Zero
Shutter
Status:
861 Connected

3.8 Results Files

Result files are text files that are automatedly generated in the RESULTS folder in the working directory. There are two files generated each time the 861 is run when the DCM software is running and connected to a 861. The first is the info file. The file is named with the process name, run number and “info” at the end. It is formatted as shown below.

```
[Process]
File Version = 1.0
Process Name = ExAllState
Process File =
\\marlin\rf$\peterf\Desktop\RESULTS\ExAllState_0020.txt
Run Number = 20
Start Date (MM/DD/YYYY) = 01/16/2018
Start Time (HH:MM:SS) = 09:49:36
Data Points/Minute = 600

[Layer001 = Pd]
Layer Start Time  (HH:MM:SS) = 09:49:36
Starting Crystal Health = 90%
Deposit #1 End Thickness = 0.011 kÃ…
Deposit #1 Average Rate = 1.84 Ã…/s
Deposit #1 Average Power = 19.05%
Deposit #1 Starting Power = 20.00%
Deposit #1 Ending Power = 18.30%
...
Layer End Time  (HH:MM:SS) = 10:58:12
Ending Crystal Health = 89%
Layer End Thickness = 0.011 kÃ…
Log Final Status = Finished
```

The second file is the run data file that can be used for charting and logging.

```
[Telemark 861 DCM Process Data Log]
File Version = 1.0
Time(sec), Rate(Ã…/sec), RateDev(%), Power(%), Thickness(kÃ…)
0.1,,0.0,0.0,
0.2,,0.0,0.0,
...
```

Frequencies are recorded if on the Setting tab the option for Frequencies is selected.