



### Electronica EL400 SDM Function

Congratulations on the purchase of your Electronica 400 series mill kit. This article addresses how to program and recall SDM (Sub Datum Memory) points.

You must first program points into the SDM function before you can recall points. The SDM function has two programming modes – Program “ProGrAM” and Learn “LEArn”.

The first programming mode, “ProGrAM”, requires the user to enter the point error distance in a list like format. Although this mode doesn’t require the operator to proceed to each individual point, it does require the user to enter not the coordinate value, but rather the error distance of each point from ABS zero, which vastly complicates programming.

The “LEArn” mode requires the user to proceed to each point individually, and then “captures” each point as the mill moves from point to point. Although somewhat slower, the “LEArn” mode is intuitively easier, as the user can “see” each waypoint as it is entered. For this reason, DRO PROS recommends our customers use the “LEArn” mode when programming SDM points.

Before starting to program SDM points, the user should first set a meaningful ABS zero point on your part. This may be on the centerpoint, bottom right corner, an easily indexable point, etc. Remember, all your SDM points index off of your ABS zero point, so it should be set to something that’s easily repeatable on multiple parts.

#### Programming SDM points via Learn Mode (easier, more intuitive):

1. To enter the SDM mode, **push the “SDM” button once** – it’s on the lower right of the display.

The x axis display window should now read “ProGrAM”, and “abs” and “fn” and should be lit in red along the lower edge of the display.

2. **Push the “6” key once.** The x axis display window should now read “rUn”.
3. **Push the “6” key once.** The x axis display window should now read “LEArn”.
4. **Push the “ent” key once.** The x axis display window should now read “StEPno”, and “1” on the y axis display window.
5. **Push the “Y” axis key once, then enter the SDM point you want to start programming from (in this example 1), followed by the “ent” button.** The display will now return to the SDM abs window, with X, Y and Z coordinate values displayed on the front.
6. Move your mill to the first point you want to program into SDM memory. The display values in the X, Y and Z axis will change as you move the mill.
7. **Push the “6” key once.** The x axis display window should now read “StP 1” (or whichever stepping start point you programmed in step #5). This confirms which SDM point you are programming.
8. **Push the “6” key once.** This now locks in and programs the current mill position into SDM point 1. The display will now return to the SDM abs window, with X, Y and Z coordinate values displayed on the front.

9. Move your mill to the next point you want to program into SDM memory. The display values in the X, Y and Z axis will change as you move the mill.

10. **Push the “6” key once.** The x axis display window should now read “StP X”, where X represents the next sequential value from the point programmed in step #5. (Assuming we started programming with point 1 in Step #5, the x axis display window would now read “StP 2”).

11. **Push the “6” key once.** This now locks in and programs the current mill position into SDM point 2. The display will now return to the SDM abs window, with X, Y and Z coordinate values displayed on the front.

12. Repeat steps 9-11 as needed to complete your SDM programming.

Push the “C” key to exit SDM mode. Note the red “fn” light is no longer lit in red along the lower edge of the display, indicating you’ve exited the SDM “LEArn” mode.

#### **Programming SDM points via Program Mode (harder, less intuitive):**

1. To enter the SDM mode, **push the “SDM” button once** – it’s on the lower right of the display.

The x axis display window should now read “ProGrAM”, and “abs” and “fn” and should be lit in red along the lower edge of the display.

2. **Push the “ent” key once.** The x axis display window should now read “StEPno”, and “1” on the y axis display window.

3. **Push the “Y” axis key once, then enter the SDM point you want to start programming from (in this example 1), followed by the “ent” button.** The display will now return to the SDM abs window, with X, Y and Z coordinate values displayed on the front.

4. **Push the “X” axis key once, then enter X point value you want to program, followed by the “ent” button.** Remember that the value you enter is the distance **from** the point. In other words, the value may be opposite to what you intuitively might want to enter. In other words, to enter a point value of “2”, you would actually have to enter -2 instead.

5. **Push the “Y” axis key once, then enter Y point value you want to program, followed by the “ent” button.** Remember that the value you enter is the distance **from** the point. In other words, the value may be opposite to what you intuitively might want to enter. In other words, to enter a point value of “2”, you would actually have to enter -2 instead.

6. To proceed to the next SDM position, **press the “6” button, followed by the “ent” button.**

7. Repeat steps 4 - 6 as needed to complete your SDM programming.

Push the “C” key to exit SDM mode. Note the red “fn” light is no longer lit in red along the lower edge of the display, indicating you’ve exited the SDM “ProGrAM” mode.

#### **Recalling SDM points:**

1. **Push the “SDM” button.**

The x axis display window should now read “ProGrAM”, and “abs” and “fn” and should be lit in red along the lower edge of the display.

2. **Push the “6” key once.** The x axis display window should now read “rUn”.

3. **Push the “ent” key once.** The x axis display window should now read “StEPno”, and “1” on the y axis display window.

4. **Push the “Y” axis key once, then enter the number of the SDM point you want to recall, followed by the “ent” button.** The display will now revert to the SDM inc window, with X, Y and Z “distance to go” values displayed on the front. (Note the extra decimal point, which indicates the display is now in the SDM run mode, and “abs” has now changed to “inc” in red). The value shown on these axis, is the error, or distance from the mills present position, to the SDM position you’ve just recalled.

5. Move the mill so that the X, Y and Z axis displays are zeroed out. You’re now at the exact SDM position you recalled in step #4.

6. To proceed to another SDM position, **press the “6” button.** The x axis display window should now read “StEPno”, and the y axis display window will display the value of the next sequential SDM point. **Push the “Y” axis key once, then enter the number of the SDM point you want to recall, followed by the “ent” button.** Again, the display will now show the X, Y and Z “distance to go” values displayed on the front.

7. Move the mill so that the X, Y and Z axis displays are zeroed out. You’re now at the exact SDM position you recalled in step #6.

8. Repeat steps 6 and 7, as needed, to recall more SDM points.

At any time you want to confirm which SDM position you’re “on”, **push the “8” button.** The x axis display will read “StP X”, where X is the SDM point you’re going to/at. **Push the “8” button** again to return to the previous screen.

Push the “C” key to exit SDM “rUn” mode. Note “abs” is now lit in red, and both the “inc” and “fn” lights are extinguished along the lower edge of the display, indicating you’ve exited SDM “rUn” mode.

Congratulations, you’re finished!

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