

# TABLET command

2379 GstarCAD MY /KW August 23, 2021 [CAD Commands](#) 0 2262

The **TABLET** command is used to calibrate, configure, turn on and turn off the digitizer.

## Command Access:

**Menu** : Tools > Toggle Tablet > On

**Command** : TABLET

## Command Prompts:

Tablet: ON/OFF/CALibrate/ConFiGure/:

## Relative Glossary:

### ON:

Turn on the tablet mode. Users could specify the TABLET system variable to 1 to turn on the tablet mode. Users could also press **CTRL+T** to turn on or turn off the tablet mode.

### OFF:

Turn off the tablet mode. Users could specify the TABLET system variable to 0 to turn off the tablet mode. Users could also press **CTRL+T** to turn on or turn off the tablet mode.

### Calibrate:

Calibrate the digitizer by paper drawing or photo and create digitizer transformation. It is a map from digitizer to coordinate drawing system. Users could use this option to make points on drawing digital and map them to real coordinate system.

Users could calibrate digitizer in model space or paper space. The "Calibrate" option could turn on the digitizer mode. If users switch from one space to another, the digitizer will be turned off.

The drawing should be flat and fixed on digitizer without bump or wrinkles. It could be placed on digitizer in any directions.

Users could input any number of points, but those points should not repeat. The inputted point does not need on the original of an axis. The drawing may be more accurate if increasing the number of inputted point. If users only input two points, it will execute orthogonal transformation automatically.

If users input three or more than three points, the program will transform in three types: Orthogonal, Affine and Projection. It could determine the proper type of calibration point. If users input more than four points, it will take a much longer time to calculate projection type. Users could cancel this process by pressing **ESC**.

After calculating calibration type, it creates a table to display calibration points and transform types. If the projection transformation is successful, it will prompt users to transform types. The prompt could be "Success", "Exact" or "Canceled". Even if the projection transformation has been canceled, it could also be specified. The program will calculate the result when canceling.

### Orthogonal:

Specify any types of linear transformation. Users could pan, independently scale and rotate by two specified calibration points.

This option could be used in accurate drawing in paper space. It could also be used in a drawing with many points that need to be digital and distributed in a long and narrow part as a straight line.

Note: users must specify the bottom left corner point firstly, and then specify the top right corner point.

#### **Affine:**

Specify any types of linear transformation by three calibration points in 2D space. Users could pan, independently scale in X and Y direction, rotate and shear.

If the drawing is scaling with uniform aspect ratio and the assumed parallel lines are parallel in fact, users could use the "Affine" option.

The calibration reports the difference between program and the best fit by RMS (Root Mean Square). If the RMS is very small, users could use the "Affine" option.

#### **Projection:**

Specify a projection transformation that equivalent to a perspective projection from one plane to another plane in space by four calibration points. Through the projection transformation, some parts in the digital panel are stretched as varying amounts. In the projection, straight lines are still straight lines, but some parallel lines will not necessarily remain parallel.

The projection transformation could calibrate parallel lines which seemed to be intersected.

#### **Repeat table:**

Redisplay calculated table, it will evaluate transformation type.

#### **Transformation table:**

Report calibration points and supply related information about each transformation type.

#### **Outcome of Fit:**

Report the outcome of fit for each transformation type. If the outcome of fit for a certain transformation type is neither "Success" nor "Exact", it will report the fail result of the whole calibration and end this command. If the outcome of fit is not "success", the rest column of each table is empty.

#### **Exact:**

Specify the correct number of effective transformation points.

#### **Success:**

The specified number of points has exceeded. The program has successfully fit the transformation to point's data.

#### **Impossible:**

The specified number of points is not enough.

#### **Failure:**

The specified number of points is enough, but the program could not fit the transformation to points. It is usually caused by collinear or completely overlapped.

#### **Canceled:**

Cancel the specified fit process. It only appears in "Projection" transformation.

#### **RMS Error:**

The RMS Error is the difference between measurement program and the best fit, it reports the RMS error. Our goal is to get the smallest EMS.

#### **Standard Deviation:**

Report the standard deviation. If it is close to zero, the error of each calibration point roughly equal.

#### **Largest Residual/at point:**

Report the most inaccurate point in projection. The largest residual point is the distance from the

projection point to the best fit point in transformation. It is reported in current linear units.

**Second-largest Residual/At Point:**

Report the second inaccurate point in projection. The second-largest residual point is the distance from the projection point to the best fit point in transformation. It is reported in current linear units.

**Configure:**

Specify or rearrange the menu panel of digitizer, or specify a small part of a digitizer to be screen dot area.

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