Purpose: Perform Line Leveling using the Leica DNA series Digital Level

Instrument: DNA10/DNA03

There are two models of the Leica DNA series Digital Level; the DNA03 and the DNA10. The DNA03 has the better level accuracy of 0.3mm RMS over 1 Km return leveling run compared to 0.9mm with the DNA10. This is when used with an Invar staff.

Further information: Refer to your instrument reference manual.

1. Getting Started
   a. The DNA level operates on a single NiMH battery. The on switch is located directly below the display screen. The keys on the right hand side of the display screen control the operation of the DNA level.
   b. The INT key allows you to take Intermediate shots
   c. The MODE allows you to set the method of measurement (number of shots etc)
   d. The USER key is a configurable key that is normally set to Code
   e. The PROG key allows you to set up onboard data logging
   f. The DATA key allows you to access recorded information
   g. The SHIFT SET OUT allows you to set out objects at a certain elevation
   h. The SHIFT INV allows you to invert the staff and take levels to the underside of structures
   i. The SHIFT FNC allows you to change create codes and change the auto point incrementing.
   j. SHIFT MENU allows you to change the settings.
   k. The CE will clear the last entry
   l. ESC will take you back one step in any program.

2. To Perform Line Leveling
   a. Select the PROG Key
   b. Select 2. Line Leveling ENTER
   c. 1. Set Job. ENTER
   d. Select NEW and enter job name and then SET.
   e. 2. Set Line. ENTER
   f. Name is Line Name. Meth: Usually BF method. PT ID is point number of Reference Level (Mark that staff is on at the start of the Level run). HO is Height of Object (or Reference Level). Press SET
g. 3. Set Tolerances. Dist Balance: Equal Backlight and Foresight tolerances. Max Dist is maximum length of shot. StafLow is minimum reading on staff allowable. This avoids heat shimmer at base of staff.

h. By Selecting VALUE you can set the values for the above Tolerances. SET

i. 4. Start. A check list of the current settings is displayed. OK ENTER

j. The arrow is on B so take your Backlight first. Focus on leveled staff on Reference Level and press the red measure button below the focus knob. The arrow will now be pointing to F for foresight.

k. Press the INT key for Intermediate shots. When intermediate shots have been completed press ESC key to return to the Foresight screen.

l. Take your Foresight to your next change point and then reposition your DNA level ready for the next Backlight and series of intermediate shots.

m. Record your Backlight and then take your intermediate shots.

n. Repeat the above process until you are ready to take your final Foresight onto a mark of known height. This can be your starting point (Reference Level) or a different mark of known level/

o. To finish the survey select Quit. Turn off the level. The data is automatically saved as you go.

3. Line Adjustment: For in field Leveling Line Reduction
   a. Select your Job, Line and method of Misclose adjustment. CONT
   b. Select your Control points i.e. start and end point.
   c. Select RUN to perform adjustment. The adjust points are now displayed.
   d. Select OK to exit.

4. Check and Adjust: Used for checking calibration of the DNA Level.