SETTING PRISM CONSTANTS ON A LEICA TOTAL STATION

First a primer on Prism Constants (also called Prism Offsets), more correctly called Absolute Prism Constants (APC). Refer to Figure 1 to understand that an EDM needs to be “told” what prism you are using to correctly calculate the distance to the Vertical Axis of the prism.

Leica total stations assume you are using Leica prisms, the most common of which is the Leica GPR1 Round prism, which has an APC of -34mm (by the way, the APC is always negative or zero). If this is the case, you merely select “Round” under “Prism Type” in the EDM menu, and go to work. You will see 0.0mm displayed under Prism Constant, meaning no prism constant correction is necessary. This is where some confusion commonly creeps in. If you select “Mini”, you will see 17.5mm displayed. This is because a Leica Mini Prism has an APC of -16.5mm, so 17.5mm must be added to -34mm to come out to -16.5mm. It’s a Swiss thing.

Now let’s take the common case where you are using CST, SECO, or Topcon glass marked -30mm Offset. You’ve got to add 4mm so your Leica instrument will measure correctly.

Here’s how: Select MENU, EDM, then select User under the Prism Type. Scroll to Prism Const, INPUT, enter 4, ENTER, and OK to save the setting.

Similarly, if you are working with a 0mm offset prism (or reflective tape), you will need to add 34mm. You get the idea.
Remember, with a Leica instrument the Prism Constant Field is actually the correction you need to enter relative to -34mm, NOT the actual prism constant (offset) of your prism.