Automated Precision (API)

API Radian (Pro) & Radian (Plus)/OmniTrack2

Figure 3-56. Radian & OT2

Hardware Setup

Set up the unit following the manufacturer's directions. The API Radian and OmniTrack2 trackers are networked TCP/IP connected devices and should be connected directly to a computer with an Ethernet crossover cable or through a network switch.

Connect the temperature probe and ensure that it is well clear of any external heat sources (such as the heat fan on the back of the power supply). Ensure that the instrument is powered on and that a reflector is in the home position at startup.

Software Setup

Each version of SA is built with the most current version of the API software development kit (SDK). This driver set provides the tools to interface with the instrument. Check the Readme file to see which SDK version is being used. No additional software installation is necessary.

Set the IP address on your computer to be compatible with the address set on the tracker. The default API IP address is: 192.168.0.168 with the subnet mask 255.255.255.0.

Starting the Interface

1. Select **Instrument>Add** and choose API Radian or API OmniTrack2 from the ***Add Instrument to SA*** dialog (Figure 3-57).

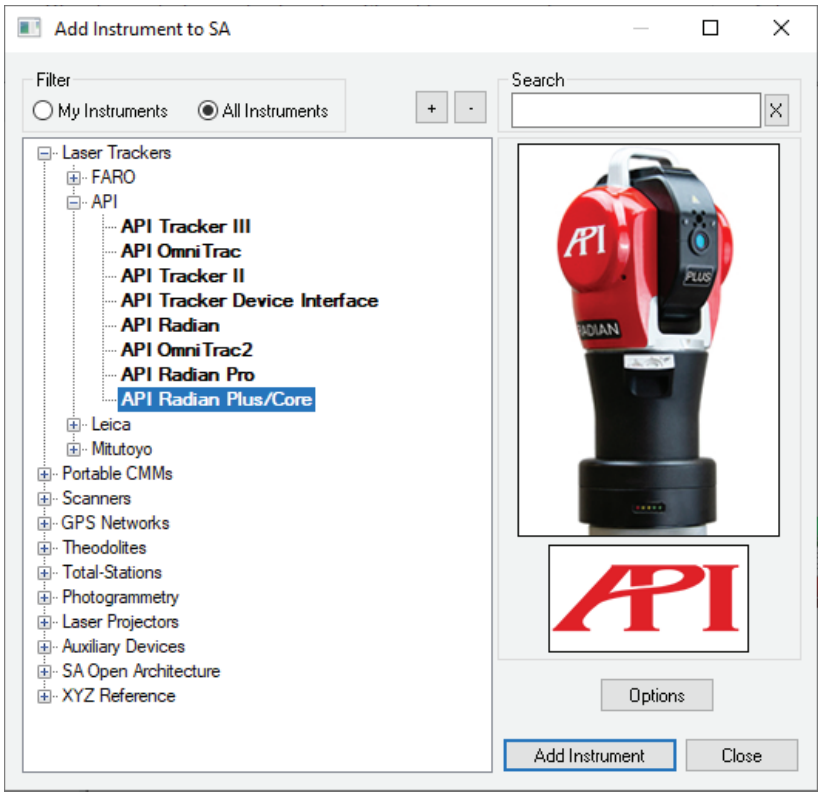

Figure 3-57. Adding a Radian tracker.

2. Run Interface Module without connecting (**Instrument>Run Interface Mode**) and choose *API Device Interface* (do not use the Laser Trackers interface for either the Radian or the Omnitrack2).

3. Within the ***Connect to SpatialAnalyzer*** dialog, select the instrument station (computer name, job name, Collection::Instrument Name: Serial Number) you wish to connect your instrument to from the network list.

4. In the ***API_DI Connection*** dialog, enter t he tracker's IP address (if different than the default) and use the Ping button to test the connection if needed. Once satisfied, click OK. The next time you connect this instrument to the instrument, you can just select *Run Interface and Connect*. This will utilize the last saved settings and automatically connect the instrument.

Intelliprobe 360 and VProbe

Please refer to the current API Intelliprobe 360 or V-probe user's manual for setup and calibration instructions. A version is available on our webpage: http://www.kinematics.com/ftp/SA/Install/Driver%20Downloads/Laser%20Trackers/API/Radian/.

Figure 3-58. Iprobe & Vprobe

1. Ensure the probe has been fully unpacked, configured to communicate with the controller, and calibrated within API's software. A *.prm file will be available with the I-probe and should be placed in the **C:\Analyzer Data\Persistence** directory.
2. Place a 1.5" inch reflector in the nest.
3. Run a virtual level measurement (**Check/Cal> Virtual Level**). This will align the instrument with gravity, allowing the I-360 pendulum measurements to be correctly interpreted.

Note: Conducting the Virtual Level measurement will transform subsequent tracker data. If you have taken measurements from this instrument station previously, a new instrument station must be added.

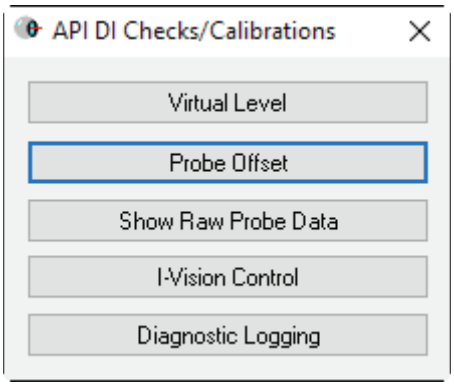

Figure 3-59. Check/Cal Menu

4. Set up the probe tip and perform calibrations as necessary (**Check/Cal>Probe Offset)**
5. The Probe target should be detected and assigned automatically.
6. Specific measurement profiles have been added for use with a probe and must be used to take data from the device (Figure 3-60). Start the measurement profile so that it is running in the background and then use the probe to trigger measurements.

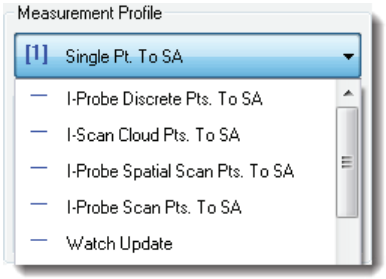

Figure 3-60. I-360 Measurement profiles.

iScan3D

At startup, when the iScan3D, or any API Probe or Scanner, is present, the 1.5" SMR will be set as the selected Target. That is because the tracker should be Homed to the SMR first, a virtual level needs to be run, and then locked on to the scanner or probe.

Figure 3-61. iScan3D

If an iScan3D is detected at startup, 3 Measure Profiles will be set to the Quick Select Measurement Profiles:

- **I-Scan Cloud Pts To SA.** Used to scan with the iScan Scanner.
- **Probe Discrete Pts To SA.** Used to probe isolated point locations.
- **Probe Spatial Scan Pts To SA.** Used to scan using the probe in a stream of spatially separated points.

Probe detection is automatic. You should NEVER need to manually select the iScan3D as the active Target. It is automatically recognized upon locking the beam on to it.

The measurement operation will automatically be switched to "Probe [M] L[L] T[D]" (M = H or V mount, L = probe length, D = probe dia.) upon initiating a probe measurement. It will automatically switch back to "iScan3D" when scanning cloud points.

Upon locking back on to an SMR after using the iScan3D, the active target will switch back to the last used SMR.

TTL Measurement

Externally triggered measurements are supported. This can be useful for synchronizing measurements with the operation of an additional device or between multiple instruments. To do so:

1. Double check that the ttl trigger source is plugged into the trigger port on the controller
2. Within the instrument interface go to **Settings >> Tracker >> General Settings** and hit API_DI, in the tracker specific settings toggle with the *TTL Trigger On* check box (Figure 3-62).

The TTL trigger will take the place of your Sampling Frequency setting in any Temporal Scan acquisition until this option is un-checked.

3. Select a scan measurement profile with a *Temporal Scan* Acquisition mode, such as *Watch Update* and start the measurement profile.
4. Trigger measurements with the TTL signal.

A point is acquired at each 5-0V transition of the input TTL signal, which should be connected directly to the instrument controller.

Buffer control is also available for TTL triggered data. The buffer size can be set in the DI settings dialog and the buffer size is persisted (defaults to 200 pts.), but "TTL Trigger On" is turned off every time the interface is closed. The buffer for TTL data will send its remaining contents to SA if you finish the measurement with "Done", it will clear if you "Abort".

* Requires tracker firmware version 5.170 (or later).

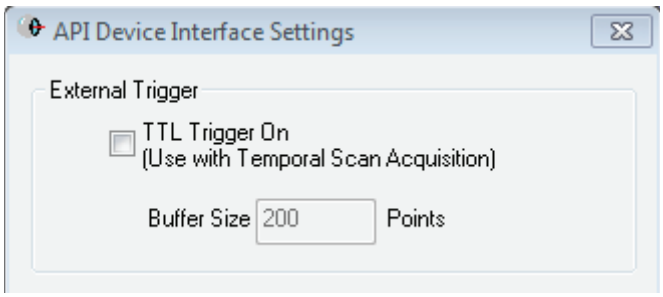

Figure 3-62. API TTL Trigger Controls in the Tracker Settings.

Running the Tracker Interface Separately

One of the unique features about SA's architecture is that the instrument interface can be run separately from SA. This provides a means to run multiple trackers independently on different machines while connect to a single SA for data storage. Doing so also provides the ability to separate the persistence files for individual trackers, as the persistence file will be saved in the directory as where the tracker interface is launched, as opposed to the ***C:\Analyzer Data\Persistence***

folder.

In order to run the SA Laser Tracker process separately some additional support files are required. These include the following files (Figure 3-63):

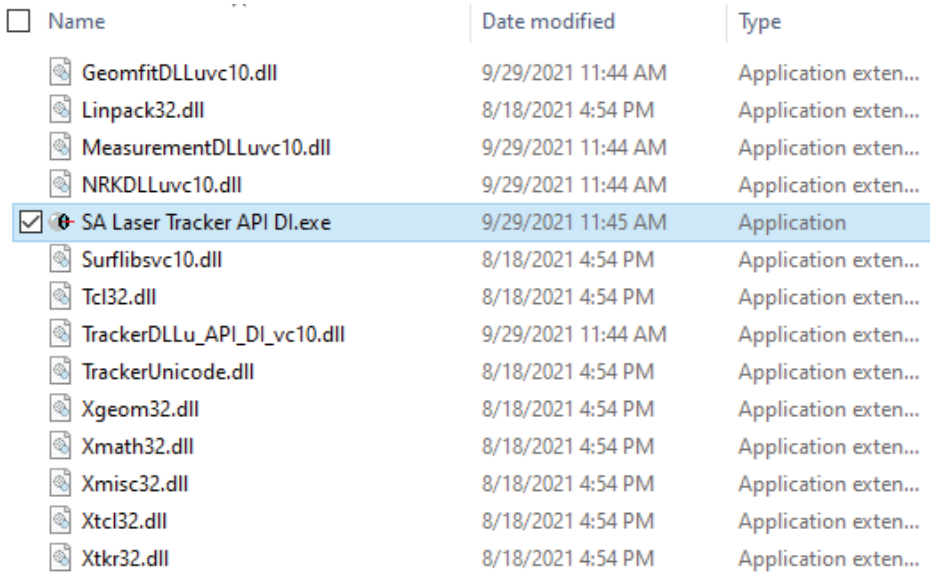

Figure 3-63. Required Files to run the SA Laser Tracker process independently from SA.

API T3

The API T3 is a unique instrument in that it can be run with either of 2 separate interfaces. To run the T3 with the API Device Interface follow the procedure outlined for the Radian. To take advantage of the legacy interface follow the directions outlined below for connection to the API T2+. The parameter file is stored on the controller for the API T3 tracker. Like the API T2+, you will see a default location for a parameter file. In the case of the T3, this is only the location where a back-up copy of the parameter file will be written from the controller. To change this location, just press the Browse button in the tracker connection dialog.

API T2+

The parameter file, `[tkr serial#].prm` contains the kinematic correction info, home location, etc. for the tracker. For example, if your tracker serial number is 3827, the file name will be `3827.prm`. This file must be located successfully by the tracker initialization for the tracker to run. By default the parameter file should be located in `C:\Analyzer Data\Persistence`. To change this location, just press the Browse button in the tracker connection dialog, as pictured in Figure 3-64.

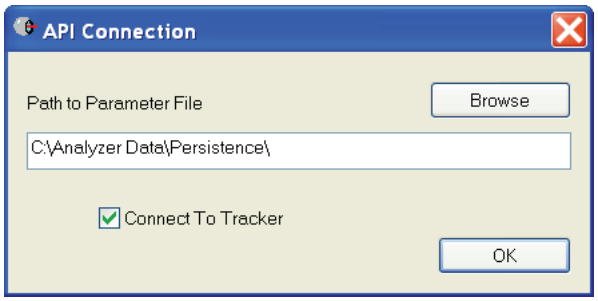

Figure 3-64. The legacy API Connection window.

The parameter file is edited when an API calibration is run. Ensure that the file attributes are NOT set to *read only*.

You must have a working serial port for the connection to the tracker. Use the lowest available serial port number for the tracker connection.