

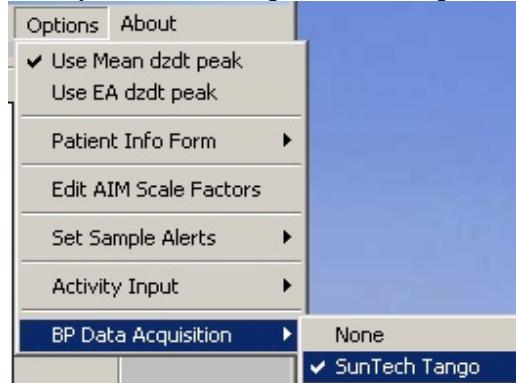
COP-WIN/HRV/BP Version 6.01 Upgrade Info

The primary purpose of the 6.01 upgrade to version 6.0 is to offer users the additional option to directly acquire blood pressure data using the COP-WIN/HRV program. BIT is now a distributor for the SunTech Medical Model “Tango” Blood Pressure monitor and we have updated version 6.01 to have interactive control of the Tango monitor during cardiac performance data acquisition. The list below is an overview of the changes included in this update.

- The data acquisition capabilities of the COP-WIN/HRV system have been expanded to include systolic and diastolic blood pressure values that are automatically saved with the cardiac performance data and the values for Total Peripheral Resistance and the TPR Index are computed in real-time with each ensemble average. This feature requires the addition of a SunTech Tango BP monitor and associated cables.
- The HRV data acquisition options have been expanded. Version 6.0 required a minimum of 128 sec for the HRV acquisition epoch in the “with each EA” mode. This minimum has been lowered to 64 sec in version 6.01.
- The option to turn OFF the Activity Input display from the COP-WIN/HRV acquisition Window has been added to the Main Menu Options.

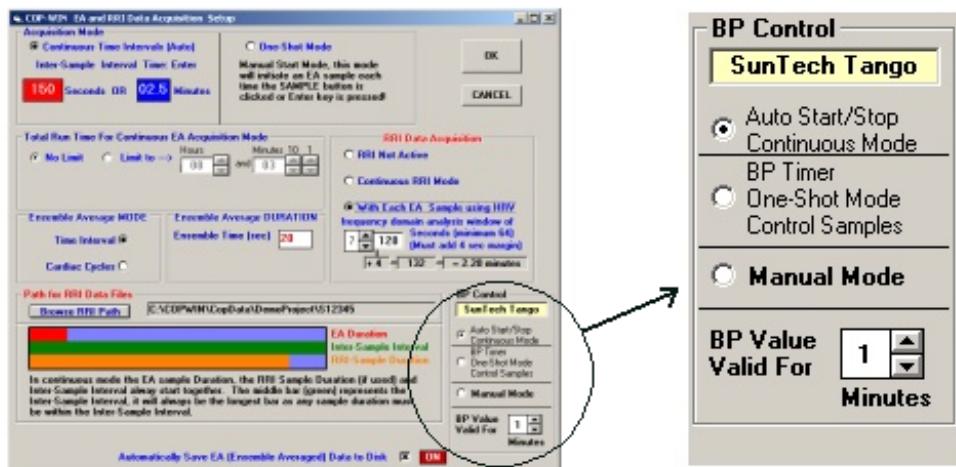
Using the SunTech Medical Tango BP Monitor for Acquiring BP Data

. In the COP-WIN Main Menu Bar under Options, if the BP Acquisition is set to “None” then the layout of the Acquisition Setup Window is the same as in Version 6.0.

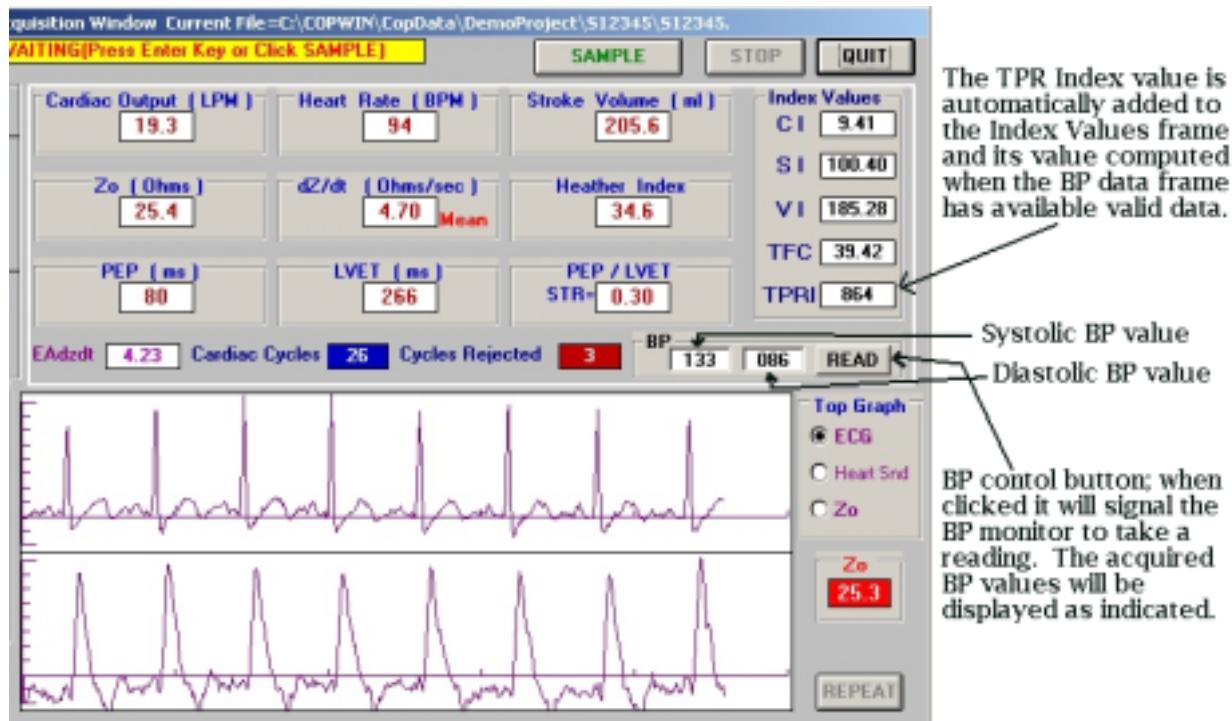


If the BP Acquisition is set to “SunTech Tango” the BP control frame will appear in the lower right corner of the Acquisition Setup Window. This control offers three modes of operation and the option to set a time limit (in minutes) that any acquired BP values shall be considered valid.

Acquisition Setup Window



To describe these modes it will also be necessary to be familiar with the modified layout of the Acquisition Window. When BP acquisition is enabled the Acquisition Window will be modified to include the **BP** frame and the **TPRI** index value will be added to the **Index Values** frame. There is only one control related to BP acquisition and that is the BP control button. This button located in the BP frame is normally labeled "READ".



The **Manual Mode** is used when it is desirable for the COP/HRV data acquisition and BP data acquisition to be independent of each other. In this mode the BP monitor will only acquire BP values when the BP control button is clicked or when a BP reading is initiated directly by monitor's internal timer. When the BP reading is complete the BP values will be transferred to the BP frame in the Acquisition Window. If cardiac impedance data are being acquired these

BP values will automatically be included and used to compute TPR and TPRI (if BSA is available). ***It is in this mode that the setting for the length of time that BP values are to be considered valid is most important!*** If BP readings are only to be taken during certain portions of your research protocol, such as rest periods, it is certainly advisable to have the BP values expire after a short interval. This is in order that a BP reading taken during one segment of the protocol would not be used during a subsequent segment of the protocol where BP readings are not taken. The default for this interval is 1 minute. The control is adjustable from 1 up to 10 minutes. ***Please only use intervals longer than one minute when you are sure***



your subject is in a stable resting condition!

The “valid” interval timing will begin when the most recent reading is displayed in the BP

frame , at the end of the interval the systolic and diastolic values will be reset to 000 unless another reading is taken. When acquiring cardiac output data, bear in mind that the BP values are only retrieved from the BP frame at the very end of the EA (ensemble average) period. Therefore, do not be concerned that if during an EA acquisition period the BP values should temporarily reset to 000 just before new values are transferred from the BP monitor. The only values used will be those that are displayed at the end of the EA acquisition period.

The **BP Timer One-Shot Mode Control Samples Mode** gives control of cardiac output data acquisition over to the BP monitor’s interval timer and/or clicks of the “READ” BP control button. With the cardiac data acquisition mode set to “One-Shot (Manual)”, an EA acquisition period will only be initiated when the monitor takes a BP reading and the new values are transferred to the COP-WIN program. For example, if the BP monitor timer INTERVAL is set to 120 (take a reading every two minutes) then at the completion of each BP reading an EA acquisition period is initiated, producing EA samples taken at two minute intervals.

If the BP monitor INTERVAL is set to “MAN” (manual) then an EA acquisition period will only be initiated when the “READ” BP control button is clicked and the monitor completes a BP reading. If this mode is used with only the BP monitor readings initiating EA samples, then the setting of the valid duration is not significant for this mode of operation. For users who have previously used the COP-BPSW sensor, this mode is essentially equivalent to using the COP-BPSW cuff line sensor and a BP monitor that is set to cycle at a preset interval.

The **Auto Start/Stop Continuous Mode** should be used when it is important that EA data samples be acquired at preset intervals over a finite length of time. It is also useful when your research protocol calls for EA data samples to be acquired at a certain interval and BP readings acquired at a different interval.

In this mode the BP monitor INTERVAL is set to the desired interval at which you wish to take BP readings. This may or may not be the same interval for EA samples. In the COP-WIN/HRV Acquisition Setup window, acquisition should be set to Continuous Mode and the EA sample duration and the inter-sample interval should also be specified. The Total Run Time for the Continuous Mode should also be set if a limit is desired.

When the COP-WIN/HRV Acquisition Window appears and acquisition is set to Continuous Mode, the BP frame BP control button will be labeled "Start" instead of "READ". In this

mode, when the BP Start button  is clicked, this will initiate the Tango BP monitor to take a reading. When the reading is complete the transfer of the BP values to COP-WIN will initiate the first EA sample and start the Continuous Mode cycle. Only this first reading will actually trigger an EA sample, subsequent BP value readings will be displayed and the data used, however the EA sample timing will be controlled by the Continuous Mode inter-sample interval setting.

Using this mode the Tango's INTERVAL time may be set to an interval that is different from the Continuous Mode inter-sample interval setting. For example, the EA samples could be acquired once a minute while BP values could be taken every two minutes, which would be more comfortable for the subject as there would not be as many cuff inflations. In this mode, if BP readings are to be taken at intervals that are several minutes longer than the EA sample interval, it is advisable to have the BP values expire after a short interval.

When the Total Run Time for the Continuous Mode has elapsed (or is manually stopped by clicking the **STOP** button), the Continuous Mode EA sampling will stop and the BP monitor's acquisition cycle will also be signaled to stop.

Expanded HRV Data Acquisition Option

The HRV data acquisition options have been expanded. Version 6.0 required a minimum of 128 sec for the HRV acquisition epoch in the "with each EA" mode. This minimum has been lowered to 64 sec in version 6.01. Frequency domain analysis (FFT) on 64 second epochs will only supply usable results for the HF variable, however it has been brought to our attention that this is the primary focus variable for some users. It is for this reason the 64 second epoch has been added. This additional option is available when the "with each EA sample" mode is selected in the RRI Acquisition Frame of the Acquisition Setup Window. Version 6.0 offered analysis windows with time durations of 2 to the 7 thru 9th power, in version 6.01 this has been increased to encompass 6 thru 9th power of 2.

Acquisition Setup Window

