

How FlukeView[®] Forms Synchronizes Meter Timestamps

FlukeView Forms Technical Note

This technical note explains the how FlukeView Forms determines the date and time that meter data was recorded, how to synchronize the PC and Meter Clock, and how to 'correct' the FlukeView timestamp to maintain timezone / daylight savings changes at upload.

Overview

The Fluke 89-IV & 189 meters have a time of day clock which provides the timestamps recorded when readings are Saved and while 'Logging' data. This clock may be set directly from the meter Setup "Hour" , using the up and down keys to change the hours (24 hour format) and minutes. You do not set the date. Rather, the meter keeps track of how many days have gone by since it's clock was last set and this is part of the date/timestamp recorded when data is saved. It is FlukeView's responsibility to determine on what Date the data was recorded.

FlukeView Forms converts both the day and time from the meters to the equivalent 'date and time at the PC when the data was recorded'. This insures that you can correlate data taken with several meters regardless of the individual meter's clock setting.

How does FlukeView correlate the clocks

When communications is established with the meter, FlukeView asks the meter for its date/time and compares that to what time the PC thinks it is. This establishes the relationship between the PC's calendar/clock and the meter's elapsed number of days and clock. For instance, lets say that when the meter is recognized, it reports that it is on the 327th day, and it's 14:47:01, and the PC clock at the time it received this information is August 4, 1999 at 14:47:18. Further lets say a reading was saved in the meter at noon (on the meter clock) two days ago. The meter timestamp for that reading

is 325th day, 12:00:00. FlukeView knows that day 325 must have been on Aug 2, 1999 and thus shows that date.

But how about the time portion? FlukeView recognized that the meter's clock and the PC clock differed by 17 seconds. On the Get Meter Data dialog box, if the checkbox "Synchronize Timestamps to the PC Clock" is checked, FlukeView treats the PC clock as the master and thus records that the data was taken on August 2, at 12:00:17 . In effect, FlukeView is able to say that when the data was recorded in the meter, the time at the PC was August 2, 1999 12:00:07 – regardless of whether the meter clock was ever set at all!

Lets extend the example to consider a second meter which was connected in parallel to the first, and was blissfully logging data at noon 2 days ago. It's clock was set 17 days ago, and its clock and the PC's differ by 4 minutes 23 seconds. The same process of establishing the correlation between the PC and this second meter allows FlukeView to show the correlation in data between the first and second meter.

How to synchronize the PC and Meter Clocks

FlukeView provides a convenient way to change the meter Setup values from the PC. With the meter in communications with FlukeView, open the menu "Meter" and select the "Change Meter Setup.." option. The current meter setup values will be displayed and may be edited. Check the "Synchronize clock with PC" box . Click on the "Send" button to transfer the setting, including the current PC time (hour, minute and seconds) to the meter. Turn the meter off, wait about 10 seconds (or until the connection broken icon on the lower right corner of FlukeView is displayed) and reestablish communications.

Note: If you reset the meter clock from the meter setup, the meter memory must be cleared first as FlukeView will not be able to compute the date correctly.

However, if you want to upload data and maintain the meter timestamps (data taken in a different time zone than the PC, or before a change in daylight savings time) – Do use FlukeView to synchronize the clocks as described above and then upload the data. FlukeView will then use the meter's timestamps for the uploaded data. OR if you have FlukeView Forms version 1.5 or greater, read the following section.

How to keep the Meter's timestamp

There can only be one 'master clock'. If your meter has data saved 3 time zones away, or before the change to daylight savings time, and it is important to show the data with those timestamps, it will be necessary use FlukeView to resynchronize the clocks. With FlukeView Forms 1.5, click the "Get Meter Data" button, uncheck the "Synchronize timestamps to the PC Clock", and respond 'OK' to the message box that explains that

the meter clock is about to be reset. If you have an earlier version, follow the instruction in the first paragraph of "How to synchronize the PC and Meter Clocks".

My uploaded data shows timestamps in the future - ?!

Ok, someone used the meter's setup function and changed the clock without first clearing the meter memory. This resets the 'days since the meter clock was reset' value to zero, but the recorded data had date/timestamps that are no longer valid. Lets go back to the first example – where we have data saved on day 325 since the meter clock was set. This time we had reset the meter clock from the meter without clearing the data. Then we establish communications with FlukeView, it finds that day 0 of the meter corresponds to Aug 4 ,1999 and thus the data when uploaded must be June 24, 2000 or 325 days in the future. While this is obviously wrong, there is no way for FlukeView to correct the error. You can correct the data if you know how many days ago it was taken – but it isn't pretty! The only way to correct the date is to go to the control panel and back the PC date up by the number of days the displayed date is in error. In our example, we know the data was taken two days ago, and we can see that FlukeView thinks the data was recorded on June 24, 2000. (Using MicroSoft Excel we establish that June 24, 2000 – Aug 2 1999 is 327 days and further that Aug 4th 1999 – 327 days is September 11, 1998. Use the control panel set the PC date to Sept 11, 1998 and again establish communications, and upload the data. FlukeView now believes that day 0 is September 11 1998, and that the data was(or is that will be?) taken 325 days in the future – or on Aug 2nd 1999.