MARTEK INSTRUMENTS, INC.

FAQ (Frequently Asked Questions)

To better assist our customers, we have collected the most common inquiries received for both our portable and on-line analyzers. If you have a question you don't see listed, feel free to e-mail us and we will respond as soon as possible.

Mark 18

1. On the Mark 18 analyzer, can I measure any parameter? Absolutely. These single-channel analyzers were specifically designed to allow the end-user to decide what parameter were to be monitored. In addition, an isolated analog output and RS232 digital output come standard with the analyzer.

2. I know the sensor preamps can be located up to 2,000 feet away from the analyzers, but how far can the sensors be located away from the preamps? That depends on the sensor type as well as the electrical "noise" at the installation site. For conductivity, we have tested the sensor up to 150 feet away, but this was done in our facility. For a typical power plant environment, we recommend no more than 50 feet of cable between the sensor and preamp. For pH and dissolved oxygen sensors, you're pretty much limited to the 6 feet of cable that comes standard with each sensor. Since each situation is different, feel free to contact us to discuss your specific application.

3. Why do you use gel-filled combination pH electrodes? I thought flowing junction electrodes performed better. We chose non-refillable combination electrodes due to their cost and low maintenance. Most of our customers like the electrodes and state they perform as well or better than the higher maintenance flowing junction pH electrodes. But remember, you are free to use whatever electrode you desire. We designed our system to avoid the use of proprietary pH electrodes. Any combination electrode designed for ultrapure water will work with our electronics.

4. How can you offer a 5 year warranty on the analyzers and preamps and a lifetime warranty on your conductivity sensors? That's easy--it's because they work. Our experience shows the units just don't fail. Based on repair records over the past two decades, we feel confident the units will perform reliably. So confident, in fact, that we're willing to back up our products with these warranties.

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5. Why do my on-line pH readings always read higher than my grab sample pH? Carbon dioxide is most likely the reason. A grab sample can introduce carbon dioxide which can lower pH values (remember carbonic acid?) by as much as .5 pH units. The best way to validate on-line pH (and conductivity) analyzers is with a referee system hooked up to the same sample stream as the on-line sensors. You eliminate grab samples errors due to carbon dioxide and you get an "apples-to-apples" comparison. The Mark 22 Calibrator is perfect for measuring pH and conductivity.

6. What type and quantity of spare parts do you recommend we stock? Actually, we recommend very little spare parts be kept in your stockroom. Depending on the number of sample points, you may want to stock one or two pH electrodes and one dissolved oxygen sensor along with a membrane kit and electrolyte. Analyzers, preamps, and conductivity sensors don't have to be stocked unless required by company policy. We keep enough stock on hand to meet almost any requirement-from a simple pH electrode on up to complete monitoring systems for a sample panel.

Mark 20

1. On the Mark 20 analyzer, can I use any combination of sensors? Absolutely. These multi-channel analyzers were specifically designed to allow the end-user to decide what type and how many parameters were to be monitored. In addition, each channel is provided with an isolated analog output and come standard with RS232 digital outputs.

2. I like the space-saving features of the Mark 20 but I'm afraid to put all my "eggs in one basket." If the unit fails I could lose up to eight channels of data. That possibility does exist. However, you have to consider the dozens of nuclear and fossil utilities that have been using the Mark 20 for over twenty years without failure (Contact us for a list of customer references). In addition, the analyzer is designed so components, from IC chips to complete printed circuit cards, can be replaced in only a few minutes. If you are still uncomfortable with the idea of eight channels of data on one analyzer, you may want to consider two Mark 24 four channel analyzers to help "spread the risk".

3. I know the sensor preamps can be located up to 2,000 feet away from the analyzers, but how far can the sensors be located away from the preamps? That depends on the sensor type as well as the electrical "noise" at the installation site. For conductivity, we have tested the sensor up to 150 feet away, but this was done in our facility. For a typical power plant environment, we recommend no more than 50 feet of cable between the sensor and preamp. For pH and dissolved oxygen sensors, you're pretty much limited to the 6 feet of cable that comes standard with each sensor. Since each situation is different, feel free to contact us to discuss your specific application.

4. Why do you use gel-filled combination pH electrodes? I thought flowing junction electrodes performed better. We chose non-refillable combination electrodes due to their cost and low maintenance. Most of our customers like the electrodes and state they perform as well or better than the higher maintenance flowing junction pH electrodes. But remember, you are free to use whatever electrode you desire. We designed our system to avoid the use of proprietary pH electrodes. Any combination electrode designed for ultrapure water will work with our electronics.

5. How can you offer a 5 year warranty on the analyzers and preamps and a lifetime warranty on your conductivity sensors? That's easy--it's because they work. Our experience shows the units just don't fail. Based on repair records over the past two decades, we feel confident the units will perform reliably. So confident, in fact, that we're willing to back up our products with these warranties.

6. Our budget is tight and our application doesn't require 4 ½ digits of accuracy for the conductivity measurement. What can you recommend? The Mark 25 Conductivity Analyzer was designed for just such an application. It features a 3 ½ digit LED display, three conductivity ranges, your choice of analog or digital output, and a guaranteed-for-life flow-thru sensor all for $995. It's ideal for replacing non-functioning or obsolete analyzers since its small size allows it to be installed in the same panel cut-out (with an adaptor plate) without any modifications.

7. Why do my on-line pH readings always read higher than my grab sample pH? Carbon dioxide is most likely the reason. A grab sample can introduce carbon dioxide which can lower pH values (remember carbonic acid?) by as much as .5 pH units. The best way to validate on-line pH (and conductivity) analyzers is with a referee system hooked up to the same sample stream as the on-line sensors. You eliminate grab samples errors due to carbon dioxide and you get an "apples-to-apples" comparison. The Mark 22 Calibrator is perfect for measuring pH and conductivity.

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8. What type and quantity of spare parts do you recommend we stock? Actually, we recommend very little spare parts be kept in your stockroom. Depending on the number of sample points, you may want to stock one or two pH electrodes and one dissolved oxygen sensor along with a membrane kit and electrolyte. Analyzers, preamps, and conductivity sensors don't have to be stocked unless required by company policy. We keep enough stock on hand to meet almost any requirement-from a simple pH electrode on up to complete monitoring systems for a sample panel.

Mark 21

1. My Mark 21 displays a block in the right hand corner of the display and the other keys won't respond. The Mark 22 displays a block when it is in the "log" mode. To deactivate the logging function, press the "LOG" key. If a "p" is displayed, it is paused in the "log" mode. Press the "RESUME" key, then the "LOG" key to return the Mark 21 to the monitoring mode.

2. How long can the Mark 21 run on batteries? When fully charged, the lead-acid batteries used in the Mark 21 normally last up to 12 hours without the display light and about 4 hours with the display light. However, battery charge is affected by temperature, the age of the batteries, and how many times the batteries have been discharged. NOTE: Lead-acid batteries, unlike NiCad batteries, should not be allowed to discharge completely. If this happens, a battery cell could be damaged thereby limiting the battery's ability to hold a charge.

3. When I turn on my Mark 21 I get no display? Most likely your batteries are dead. Try charging the batteries overnight by plugging the charger in to the Mark 21. The next day if the unit still does not come on then a battery replacement will probably be needed.

Mark 22

1. My Mark 22 displays a block in the right hand corner of the display and the other keys won't respond. The Mark 22 displays a block when it is in the "log" mode. To deactivate the logging function, press the "LOG" key. If a "p" is displayed, it is paused in the "log" mode. Press the "RESUME" key, then the "LOG" key to return the Mark 22 to the monitoring mode.

2. Why doesn't my "compensated" pH value match my on-line measurements? Unlike the conductivity reading, the Mark 22 does not display "raw" and "corrected" pH. The pH value displayed on the lower line of the display is a true Nernstian-compensated pH value. The upper line pH value is the solution-compensated value (represented by ScpH). The Mark 22 allows you to add or subtract a pH factor per degree C dependent upon the chemistry utilized. For example, ammonia-based systems commonly use a factor of 0.031 pH per degree C. If no factor is desired, simply enter a 0 value in the pH compensation menu.

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4. When I turn on my Mark 22 I get no display? Most likely your batteries are dead. Try charging the batteries overnight by plugging the charger in to the Mark 22. The next day if the unit still does not come on then a battery replacement will probably be needed.

5. When using the calibration plugs to check the Mark 22's linearity, what K factor should be used? The cell constant or K factor depends on the range of measurement anticipated. If you are going to use the Mark 22 in ultrapure (0-50 µS/cm) water, a general cell constant of 0.01000 should be used.

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