EXO Sonde Set up

Overview:

The EXO Sonde device is a multi-parameter device for measuring water quality. Horizons currently uses two version of the EXO Sonde: EXO2 and EXO3. The larger EXO2 device can be deployed with up to 6 different sensors plus a central wiper, while the EXO3 device can have up to 4 sensors plus a central wiper. For longer term continuous water monitoring a central wiper must be used but the central wiper can be replaced by an additional sensor for discrete point sampling scenarios.

The EXO 2 or 3 can be wired to an external logger and power supply or deployed using its internal battery supply in self-logging mode. It is standard for externally powered devices to also have batteries that allow the device to continue to self-log should the rest of the site lose power. *Note: batteries are not charged by an external power supply so do not need to be rechargeable*.

There is an EXO3 variation that does not have the battery compartment. Horizons may look to deploy these in the future as they are slightly cheaper.

Wiring:

The EXO3 can be wired directly into a logger using an SDI-12 port. In this case, only the Red (12VDC), Black (Ground) and Orange (SDI-12) wires need to be used.

The EXO2 model needs an adaptor (*see: Figure 1*) to allow for an SDI-12 (or MODBUS etc) output. The adaptor has clear wiring instructions.

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Figure 1: EXO Adaptor for SDI-12

EXO Sonde Physical Set up:

When physically setting up an EXO the wiper must be positioned in the centre port, but the other sensors can be arranged in any order. Any empty ports will need to be filled with a blank.

Note: Some ports are slightly easier to access than others. The pH sensor is removed for maintenance more often than other sensors so it is helpful to position this in a more accessible port.

Ensure all sensor 'O' Rings are fully lubricated before pushing firmly onto the desired port and **lightly** tightening using the supplied 'key'. The 'O' Rings on the blanks and the battery cap will also need lubricant applied.

If an EXO will be deployed in self-logging mode only, then the blank for the 6-pin connector will also be needed. No lubricant is needed for this connection.

Updating Assets:

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All sensors should already be entered into Assets, but will need to be 'Moved' to the correct Sonde. Sondes are set up as an 'Out of Service Location'. Therefore each sensor will need to be moved to the appropriate 'Out of Service Location'. The overall Sonde can then be assigned to the site as needed.

Software and connecting

1. Ensure you have the correct KorEXO software on your PC. *Note: The Software version that comes in the box is an older version – Do Not Use!*

\\ares\Hydrology\Hydrology Sites\General Site Information\Software\Programs\EXO\Kor-EXO 2.3\603782REF_USB_Content\KorEXO\Setup

2. Ensure batteries are in the device. Using the supplied magnet tap the magnet symbol on the side of the device to turn on Bluetooth. Blue lights will flash when active. In your computer Bluetooth menu (not the KorEXO software), add a new device. Wait until the name of the Sonde appears, e.g. "YSI:Sonde 2 (13E103761)", then connect. Use the passcode "**9876**" if asked. Once connected you will be able to connect using the KorEXO software.
3. Open KorEXO software. While your computer is connected to the device via Bluetooth click 'Scan for Bluetooth Devices'. Once device appears click 'Connect' (*see: Figure 2*). When connecting to a previously used EXO the sensor header bar and software footer will change colour depending on the state of the sensors; Red = needs attention, Orange = Upcoming calibration, Green = Ready (see Figure 3).

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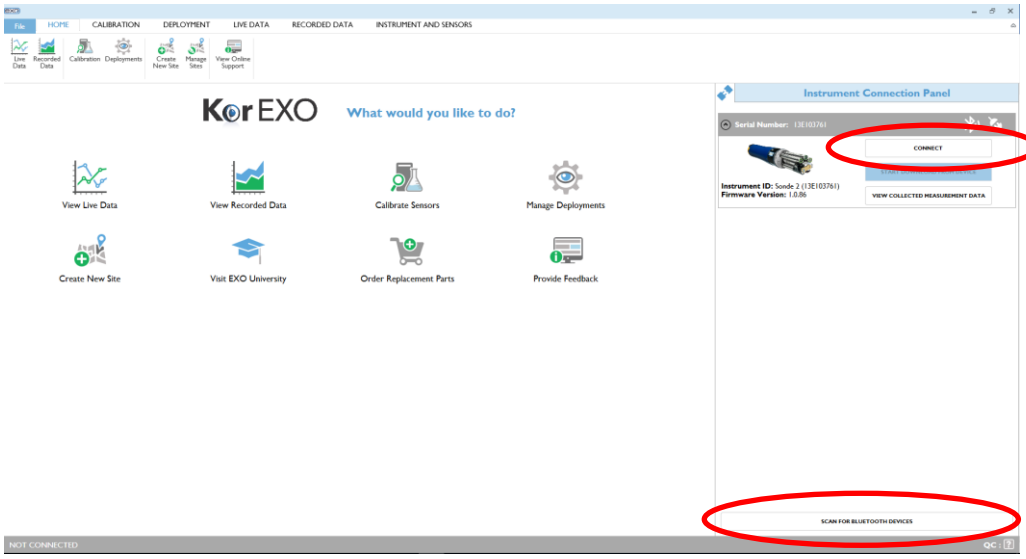

Figure 2: KorEXO home page. Scan for devices after connecting to device via computer Bluetooth.

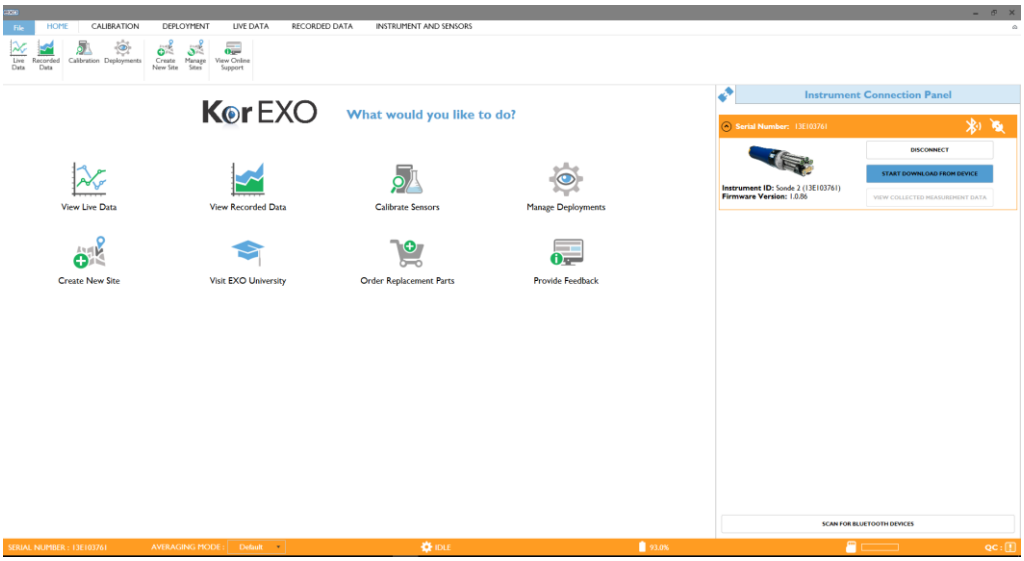

Figure 3: Example. Orange Headers/Footer showing a device that has some sensors with upcoming calibrations.

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Setup

If this is the first time you have set up a Sonde then you will need to create a template. Once created all subsequent deployment templates can be created from this first one to ensure consistency.

1. In the “Instruments and Sensors” Tab ensure the Sonde ID has been updated to include the Sonde Number from the Printed Label on the side of the Sonde. The Sonde number should be inserted after the word “Sonde” then put brackets around the serial number. E.g. “Sonde 13E103761” becomes “Sonde 2 (13E103761)”. Apply Sensor Setting.

Deployment

1. In the Deployment Tab click the “Create Template” button. Adjust the “Deployment Template Name” to match the Site Name (see Figure 4).
2. “Logging Interval Time” should be set to 15mins for a standard continuous deployment.
3. The “File Name Prefix” should match the three letter code for the site.
4. “Site Name” can be left blank.
5. “User name” is the name of the person setting it up.

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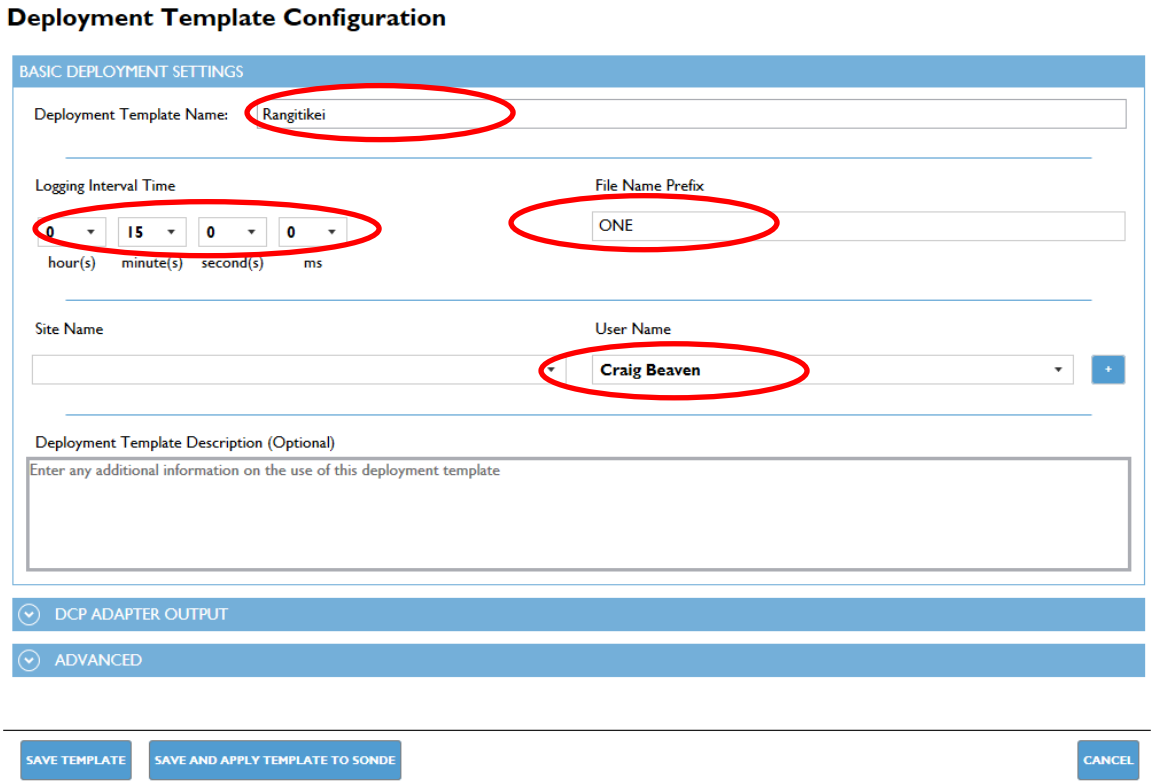

Figure 4: "Deployment" Tab. Initial fields needing attention.

6. Click the down arrow next to DCP Adaptor Output.
7. Set the SDI-12 Address if the site needs the Sonde to be something other than "0". Default is 0.
8. Move the below parameters from the left column to the "Selected SDI-12 Parameters" column. Use the ↑,↓,→ & ← buttons to move parameters around. **IMPORTANT! – The parameters must be in the order listed here from top to bottom** (see: Figure 5)**:**
    i. **Sonde Battery Power (volt)**
    ii. **Wiper Position (volt)**
    iii. **Temp (˚C)**

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iv. **DO (% Sat)**
v. **DO (mg/L)**
vi. **Turbidity (FNU)**
vii. **pH**
viii. **ORP (mV)**
ix. **Sp Cond (µS/cm)**
x. **Phycocyanin (µg/L)**
xi. **Chlorophyll (µg/L)**
xii. **Depth (m)**

9. "Save and Apply Template to Sonde". At this point you will be asked to enter deployment information for when you would like the unit to start logging. *Note: To calibrate you need to "stop Deployment". You will need to start this again after calibration.*

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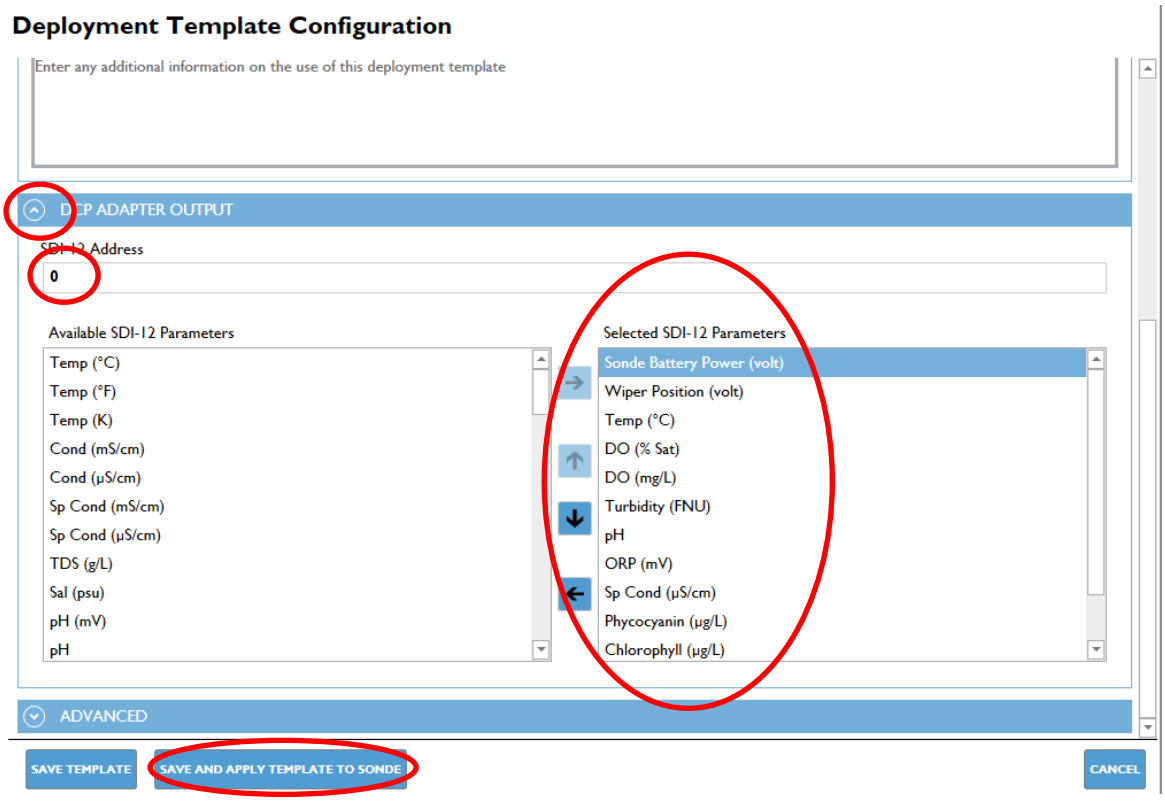

Figure 5: DCP Adapter Output. Use the ↑&↓ buttons to change the order if needed.