



*Integrated Rig Instrumentation System*

**iRIS DRILLER'S INTERFACE**

Quick Start Guide for *JOIDES RESOLUTION*

**READ IN CONJUNCTION WITH THE FOLLOWING MANUALS:**

- iRIS General User's Quick Start Guide
- iRIS General User's Manual
- iRIS Operations Superintendent Quick Start Guide
- iRIS Operations Superintendent Manual

Version	Version Date	Approved By
0	24 Mar 2023	JVH
1	12 Nov 2023	JVH

## iRIS – DRILLER’S Interface, the TL;DR version

The iRIS Driller’s interface communicates with the iRIS central processing system that is based on a NI cRIO processor in the subsea shop which collects drilling sensor data and input from the driller for depth and weight calculations. The program runs continuously and will automatically run when powered up.

Unlike the current RigWatch system on the JR, there is no master or remote computers to start, the iRIS program is the master computer in this system, and any computer (called clients) on the internal JR network that has the application installed, either the Driller’s Interface or the General User’s Interface for other users, can access the data streams broadcast by the cRIO. The interfaces allow the user to customize their own Rig Instrumentation Systems and collect individual data for their own analysis.

### iRIS Driller’s Interface Layout

The iRIS Driller’s Interface is divided into several functional areas detailed below.



Figure 1. iRIS Driller’s Interface Functional Areas

The functional areas are as follows:

#### A. Drilling/Coring Activities Panel

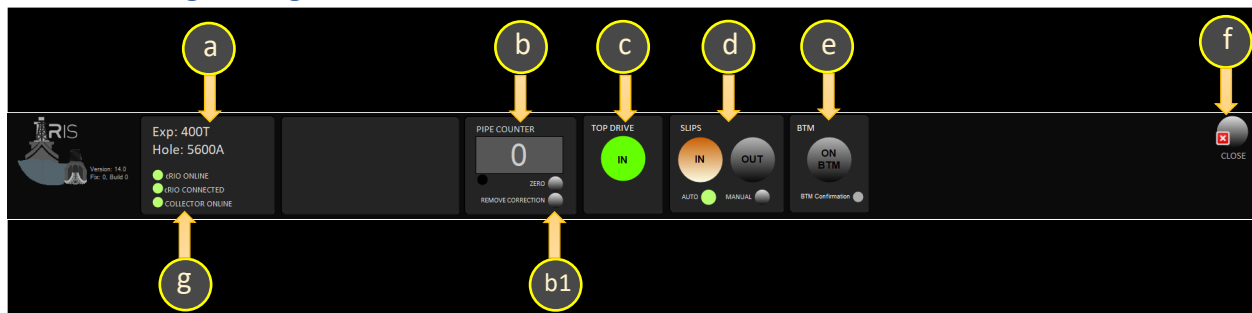


Figure 2. Expedition Information Summary Functional Area

The Expedition Information Summary contains information related to:

- a. Expedition / Current Hole Number (entered by the IODP Operations Superintendent)
- b. PIPE COUNTER shows the pipe currently in the drill string
  - b1 “Zero” and “Remove Correction” buttons:
    - The “Zero” button will clear out the pipe count.
    - The “Remove Correction” will reverse any manual corrections to the pipe count.

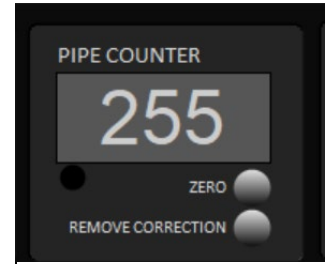


Figure 3. Pipe Counter



**CAUTION: DUE TO THE POTENTIAL IMPACT ON OPERATIONS AND DATA COLLECTION, MANUAL NUMERICAL CORRECTION AND ZERO OF THE PIPE COUNT SHOULD BE USED WITH AN ABUNDANCE OF CAUTION!**

- c. TOP DRIVE indicator will change color from green to grey depending on the state of the top drive

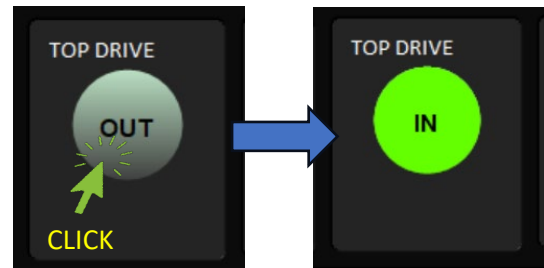


Figure 4. TOP DRIVE Toggle Switch

- d. SLIP MODE - Toggle button to set Slip mode and indicates the slip position. This can be set to “Manual” or “Auto” by checking the “Mode” toggle box. The “Auto” mode changes state based on the weight of the drillstring as measured at the crown sheaves

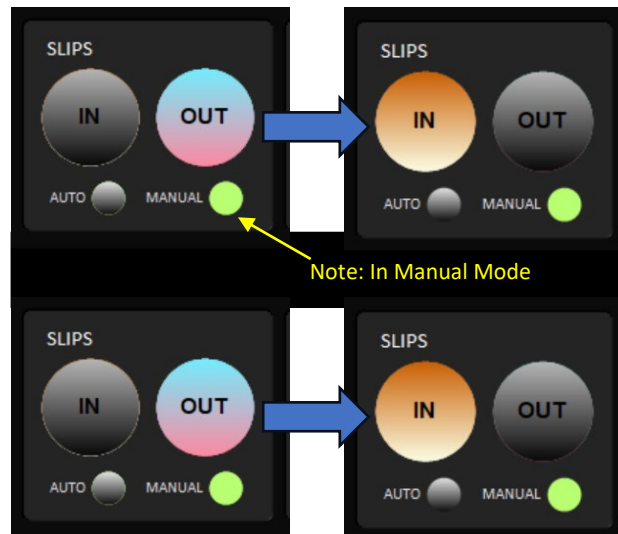


Figure 5. SLIP Controls

- e. Coring “On BTM” indicator. When toggled, these buttons will generate event flags and sent to the data collection database to flag the start and stop of the coring process

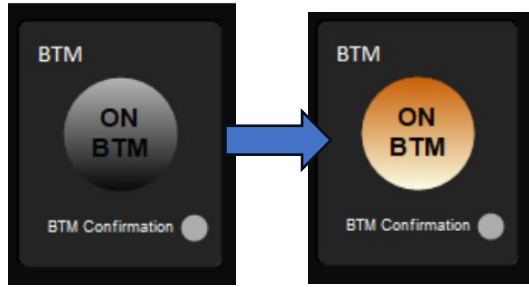


Figure 6. ON BOTTOM Indicator

- f. This indicator will illuminate green when the interface is connected to the cRIO controller. The cRIO controller is the central processor for the iRIS system
- g. Indicators will alert the Driller when the cRIO controller is offline and connected, as well as if the data collection database is on- or offline. When online, the indicators are green, and turn red when they are offline or not connected to the Drillers Interface

### B. Plot Control / Program Status



Figure 7. Plot Control / Program Status Functional Area

The Plot Control / Program Status functional area displays a variety of waterfall plots and gives the Driller control over the graphing display area.

- a. Waterfall plot display showing
  - Current Weight on Bit (WOB)
  - Top Drive Amp Draw (AMP)

- Top Drive RPM (RPM)
- Pump Strokes per Minute (SPM)
- Standpipe Pressure (PRESS)

b. The SPAN and RATE selectors give the Driller control over how much or little data is displayed on the waterfall plots.

- “SPAN” is a user-selectable time span to increase or decrease the total data history displayed on the waterfall plots. The user can select from the following time periods:

Select these time periods by clicking on the up/down arrows to move to the next step, or by clicking on the time unit in the middle and selecting from the list of available time periods.

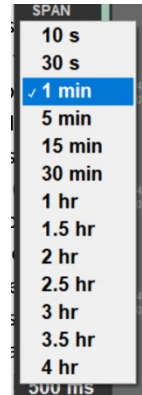


Figure 8. SPAN display adjustment menu

- “RATE” controls the rate at which data is updated in the plot area. Increasing the data collection rate improves the resolution of collected data, but is slightly slower to display, and if combined with an extended SPAN rate, will result in a “fuzzy looking” plot. If the user selects a longer collection rate, the data will have less resolution.

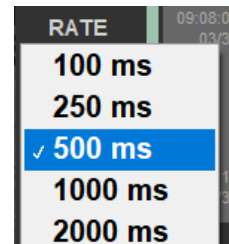


Figure 9. RATE selection menu for display controls

c. Use the CLEAR button to clear the plot area of data.

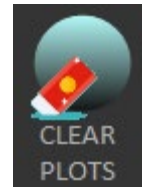


Figure 10. CLEAR PLOTS button



**CAUTION! CLICKING THE CLEAR BUTTON WILL CLEAR ALL PLOTTED DATA, BUT NOT THE DATA THAT IS COLLECTED AND STORED!**

d. Use the three buttons labeled “L”, “R”, and “B” to autoscale the collected data into (L)eft, (R)ight, and (B)oth sides of the plot lanes to control which side of the display lane will be scaled to fit data.

*Side-to-side range scaling.*

There 4 options:

1. Auto scale (B)oth the left and right click on the B control.
2. Auto scale only to the (R)ight and the user sets the left value, select R control.
3. Auto scale only to the (L)eft and the user sets the right value, select L control.
4. Users sets both right and left values, deselect all.

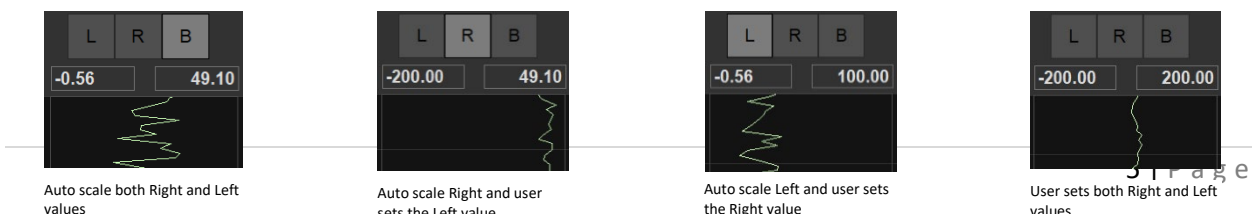


Figure 11. Scaling Options for Waterfall Plot Displays

NOTES:

- Don't see data in plot? Select **B** first.
- Auto scaling is based on all the data in the buffer.
- To change a value just select the number and type in the new value.
- To export plot, right click plot and select either:
  - Export to clipboard
  - Export to Excel
  - Export to Image

C. Downhole Operations Display

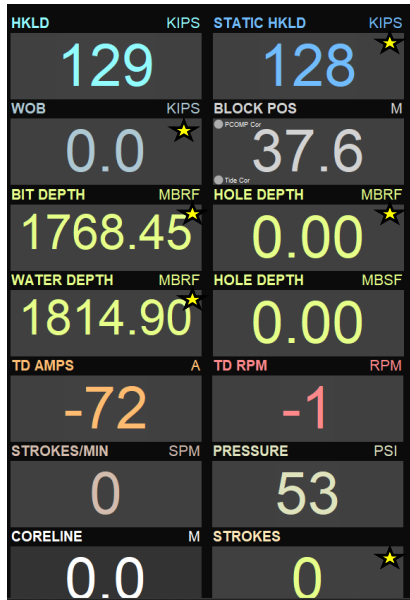


Figure 12. Downhole Operations Display

The design of the right side of the main display gives the Driller a quick glance at important parameters used during drilling and coring operations. The parameters in this display are fixed, and only give the current measured values (i.e., no historical or trend data is available). You can find detailed readings and historical trends for each of these parameters in other areas in the Driller's interface software. (See Figure 12)

Several of the numerical displays in the Downhole Operations Display can be manually corrected by the Driller. Make these manual corrections by clicking the text box and entering a new value. As seen in Figure 13, iRIS will remind the user that pressing the "Enter" button, the change is committed to the data collection database. Note that the values in Figure 12 that are starred are available for manual value correction.

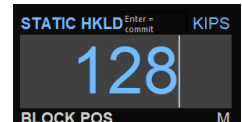


Figure 13. Manual Value Correction

REVISION NUMBER	DESCRIPTION	REVISION DATE
0	Initial release	22-10-08
1	Updated to reflect simplification of DUI (Removal of tabs, Drillers Worksheet)	23-11-12