

Iris-Syscal for Dummies

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Turn *Syscal* on

1. If using external battery, connect it to \pm sockets in the *Tx* panel and push small lever to “ext”.
2. Pull out the break button on the right side.
3. Next to the *Rx* panel, push small lever to “on”.
4. Turn knob under on/off lever and leave it a bit open (for ventilation of internal system).

Before field campaign

1. Create survey type as file `abmn.txt`. This file is a list of *all* source-receiver pairs with *xyz* coordinates for each electrode. The joint-inversion Matlab package **gerjoi** can do this: `gerjoi2iris_dc.m`.
2. Turn *Syscal* and laptop on.
3. Connect laptop to *Syscal* through USB and port “com 1” in the *Rx* panel.
4. In laptop open *Electrepro* and follow,
5. Open→`abmn.txt`,
6. Upload. There is a shortcut button for Upload that looks like $\equiv \square$.
7. In *Syscal* follow Sequence→Upload PC and write down the memory #.

During field campaign

1. Plug in electrode cable and turn *Syscal* on.

NOTE: *Syscal* reads the cable 1-36 beginning from electrode furthest of *Syscal*, so if survey consists of $n_{elect} < 36$ then start counting from the end of the cable onwards and leave remaining entries in cable without electrode connection.

2. In the main menu: Config→Mode→Change→Automatic sequence→Choose survey.
3. Put in your sequence (from the abmn.txt file) and choose Switch type to internal switch pro.
4. In the main menu: Config→Name and put your name, i.e. ASTERIX.
5. Check specific parameters in Config→,

- Stack and choose Quality factor.
- Options and choose source type (ip or er) and signed/un-signed voltage values.
- Tx.param and choose ρ and time of injection.
- Tx.param→Vab requested fixed in 800V.
- El. array (i.e. ASTERIX) and choose,

mixed/poly dip
no channel: 10.

- Skip elect and choose,

first: 1, last: n_{elect}

where n_{elect} is total number of electrodes.

6. DO NOT do: Config→Load default.
7. In menu press Tools→RS-CHECK, then press START (on the keyboard!!) and write down memory #. This will initiate the survey.

RS-CHECK **gets stuck**

In the case RS-CHECK gives 999.99 kOhms for all electrodes, chances are either your cable and/or cable-connector are broken. To trouble-shoot this issue:

1. Connect a banana cable to electrode position *P2* in the *Syscal* top panel.
2. In the *Syscal* menu go to Check Switch→Check each electrode and check each electrode position on your cable with the other end of the banana cable.

Keep in mind that *Syscal* counts electrodes in reverse from the *Syscal*. If you are using one 36 electrode cable *Syscal* will look for electrodes 36-19 and NOT 1-18.

After field campaign

1. Turn *Syscal* and laptop on and connect them with USB to “com 1”.
2. In laptop open *Prosys II* and do: Communication→Data Download→Syscal Pro.
3. In *Syscal* open Memory→Explore and find memory interval #'s where the data was written.
4. Write memory interval in *Prosys II*.
5. In *Syscal* do: Memory→Data Download.
6. Rename your csv output file to `your-survey.csv`.

Looking at the data

1. Turn your laptop on and go to `ER-gerjoi/raw/your-survey/dc-data/` and put `your-survey.csv` there.
2. Edit `your-survey.csv` file to have no spaces in the first column and save it as `your-survey.txt`.
3. Open two terminals in directory `ER-gerjoi/dc-processing/`: one with Matlab and one plain.
4. Edit `dc_process.py` to match your directory and file names.
5. In the plain terminal do `python dc_process.py`.
6. Edit `datavis_dc2.m` for the std cutoff and a -spacing you want to plot for the dipole-dipole surveys.
7. In the Matlab terminal do `datavis_dc2;`.
8. Comment on how the data looks while drinking coffee and discuss cut-off std.
9. Once you are ready to use it in the inversion, in the Matlab terminal do `iris2gerjoi_dc;`.