

Argo data management

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Argo Technical File User's Guide

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Argo data management
User manual for Argo Technical Files

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History of the document

Version	Date	Authors	Modification
0.1	14 May 2015	A. Thresher	Creation of the document
0.2	28 May 2015	A. Thresher and J-P Rannou	Updated and reformatted
0.3	31/08/2015	Ann Thresher	Updated prior to general distribution

1 Introduction

Technical files are a very important part of the Argo dataset. They allow us to diagnose systematic faults and track array performance. In the past it was assumed that all DACs knew how these should be filled and we only needed to provide details as to the names and formats. With the development of Argo format version 3.1 and the more detailed format checker, it would be useful to describe more fully how the technical files are generated and how their contents are determined. We therefore provide this user's guide to the technical files.

2 Contacts:

All questions regarding the technical tables should be directed to Ann Thresher at Ann.Thresher@csiro.au or the Argo Data Management Team.

3 History of Technical files

Technical files are intended to contain all of the engineering and ancillary data transmitted by a float. This includes battery voltages, internal pressures, various counts and anything else that cannot be provided elsewhere.

These files have in the past been filled with variables and parameters that are not really technical data. This included drift parameters (e.g., PRES and TEMP) that belonged in the trajectory files. From version 3.1, there will be no duplication between technical and trajectory files – all drift and technical data must appear in the correct place. As a result, **technical files that contain trajectory data will now be rejected by the format checker**. Similarly, **configuration variables belong in the metadata files and will not be accepted in technical files**.

4 File structure

Technical files are very simple in structure and this is described fully in the Argo user's manual which can be found at:

<http://www.argodatamgt.org/Documentation>.

They contain the usual metadata information; the actual technical data is contained in only three fields - TECHNICAL_PARAMETER_NAME, TECHNICAL_PARAMETER_VALUE and CYCLE_NUMBER. Each cycle contains multiple technical parameters, with the cycle number variable linking each technical parameter to the correct profile file. The unlimited dimension is N_Tech_PARAM. Please see the Argo User's manual for further details.

In structure, each technical variable is usually repeated for all cycles but this is not a requirement. In practice, most files will be repetitive lists of technical parameter names with the values for successive cycles in order. The only requirements are for a valid technical name to be used and the format of the value must match the units provided in the name.

bar, cbar, inHg... or COUNT, volts, etc). For example, if you convert a voltage from counts, then the unit is ‘volts’. If you do not do this conversion, then the correct unit is ‘COUNT’. Do not worry if the units you need are not listed in the **Technical parameter names** table – as long as they are on the table of **Technical parameter units**, you can use them.

5.1 Rules for creating new names for Technical Parameters

Technical Parameter Names consist of fields arranged in a hierarchy; all fields are delimited by “_” (underscore); blank characters are invalid:

<Category field>_<Descriptor field>_<Unit field>

1. The Category (first) field:
 - a. It is always WHAT IS MEASURED (VOLTAGE, PRESSURE, TIME, etc). PRES (water depth) is distinguished from PRESSURE (an engineering variable). Configuration data now belongs in the metadata file and will not be accepted in the tech files. Diagnostic values or flags are identified as such in the table.
 - b. It should be in CAPS unless otherwise noted.
2. The descriptor field:
 - a. It holds modifiers telling WHEN or WHERE the variable is measured (Surface, BatteryAirPumpOn, DescentToPark, etc).
 - b. It is of mixed case to make it more readable.
 - c. We have attempted to make names unambiguous but they must be used as intended – Don’t confuse “Current” (electrical measurement – usually in the Category field) with “Now” (measurement of time), distinguish between “Clock” (decimal hours) and “Time” (how long something lasted) and don’t use “Bottom” or “Drift” if you mean “Profile” or “Park”.
3. The unit field:
 - a. The units may be of mixed case but should conform to the Units table.
 - b. Where they exist, SI units are preferred.
 - c. Units Preceded by lowercase ‘d’ refer to deci (10^{-1}) ex: dbar
 - d. Units Preceded by lowercase ‘c’ refer to centi (10^{-2}) ex: csec
 - e. Units preceded by lowercase ‘m’ refer to milli (10^{-3}) ex: msec, mbar, mdegC, mA, mmol/L etc
 - f. Units preceded by lowercase ‘u’ refer to micro (10^{-6}) ex: usec, umol/L etc
 - g. Variables must be converted from counts if possible – counts are meaningless from an engineering perspective.
4. The full parameter name must fit into 128 characters
5. All names will be defined in the table – the latest version will be available on the web. If a name does not exist, it will not be accepted by the new format checker.
6. We decided not to exclude anything reported by the floats. This does not mean you must report everything but you may if you wish. This will result in longer technical files but also will reduce reprocessing as we realize a variable we thought unimportant becomes vital to diagnosing a problem.