



ld-ualf2

NAME

ld-ualf2 — Fields available in the type 2 UALF lightning record format

SYNOPSIS

ldcat **-printer** *ualf2*

DESCRIPTION

This Universal ASCII Lightning Format (UALF) is used to display lightning solution records in an ASCII format that is easily parsed using standard programming tools.

- Each lightning solution is displayed on a single line of output.
- The fields are separated by a single tab character.
- All of the fields are displayed in ASCII (no binary data).
- Each line is terminated by a carriage return and line feed (usable on Windows and Unix).
- The first field will always be **2** to identify the UALF record type.

This format is particularly well suited for parsing with high level languages like **awk** or **python**. This format is also easily imported into spreadsheet programs like Excel.

FIELD DEFINITIONS

Each UALF type 2 record contains the following fields:

1. The UALF record type (it will always be **2** for these types of records).
2. Network type, 0 = LF, 1 = VHF-TOA, 2 = VHF-ITF, 3 = VLF
3. Year, 1970 to 2032.
4. Month, with January as 1 and December as 12.

5. Day of the month, 1 to 31.
6. Hour, 0 to 23.
7. Minute, 0 to 59.
8. Second, 0 to 60.
9. Nanosecond, 0 to 999999999.
10. Latitude of the calculated location in decimal degrees, to 4 decimal places, -90.0 to 90.0.
11. Longitude of the calculated location in decimal degrees, to 4 decimal places, -180.0 to 180.0.
12. Altitude in meters, -4950 to +60535. This field will be 0 if the altitude is not provided in the lightning data.
13. The altitude uncertainty in meters. This field will be 0 if the altitude uncertainty is not provided in the lightning data.
14. Estimated peak current in kiloamps, -9999 to 9999.
15. VHF Range normalized power, -9999.0 to 9999.0
16. Multiplicity for flash data (1 to 99) or 0 for strokes.
17. Cloud pulse count for the lightning record. This field will be -1 if the lightning did not contain the cloud pulse count attribute.
18. Number of sensors participating in the solution, 2 to 99.
19. Degrees of freedom when optimizing location, 0 to 99.
20. The error ellipse angle as a clockwise bearing from 0 degrees north, 0 to 180.0 degrees
21. The error ellipse semi-major axis length in kilometers, 0 to 50.0km. While this field is capable of displaying values to the nearest 10 meters, some location processes (**located**, **locate3d** and **locatevid**) write out solutions in a binary format which limits the precision to 100 meter accuracy. NOTE: **locatevid** can be configured to write out data in two different formats, one has 10 meter accuracy

and the other has 100 meter accuracy. When formatting data limited to 100 meter accuracy, the last digit will always be zero (you will see values like: 1.10, 0.40, 2.20).

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23. Chi-squared value from location optimization, 0 to 999.99
24. Rise time of the waveform in microseconds, 0 to 99.9
25. Peak-to-zero time of the waveform in microseconds, 0 to 999.9
26. Maximum rate-of-rise of the waveform in kA/usec, 0 to 999.9
27. Cloud indicator, 1 if Cloud-to-cloud discharge, 0 for Cloud-to-ground
28. Angle indicator, 1 if sensor angle data used to compute position, 0 otherwise
29. Signal indicator, 1 if sensor signal data used to compute position, 0 otherwise
30. Timing indicator, 1 if sensor timing data used to compute position, 0 otherwise

SEE ALSO

ld-ualf0(l), **ld-ualf1(l)**, **ldcat(l)**, **ualf(l)**