SciQLOP - Known_time_desc - # 31

Known time description

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Double Time ranges : date from 01/01/1970 to 01/01/2100

- seconds from 01/01/1970 00:00:00 : 0 to 4 102 488 000
- milliseconds from 01/01/1970 00:00:00 : 0 to 4 102 488 000 000 (ambiguity for the first 48days of 1970 with previous time format)
- seconds from 01/01/0000 00:00:00 : 62 168 472 000 to 66 270 960 000 (no ambiguity)
- milliseconds from 01/01/0000 00:00:00 : 62 168 472 000 000 to 66 270 960 000 000 (no ambiguity)
- seconds from 01/01/2000 00:00:00 : - 946 728 000 to 3 155 760 000 (TT2000)
- milliseconds from 01/01/2000 00:00:00 : - 946 728 000 000 to 3 155 760 000 000 (ambiguity with TT2000 in seconds?)

µs, ns, ps might also be needed for tt2000

Double (IEEE754)

64bits

min value: –1.7977E+308

max value :1.7977E+308

Number of seconds per year = 60*60*24*365.25 = 31 557 600

Numbers for 100 years :

3 155 760 000 s = 3.15576 e+9 s

3 155 760 000 000 ms = 3.15576 e+12 ms

3 155 760 000 000 000 µs = 3.15576 e+15 µs

3 155 760 000 000 000 000 ns = 3.15576 e+18 ns

3 155 760 000 000 000 000 000 ps = 3.15576 e+21 ps

Typical dynamics for a double seems to be 15 digits, after that we might experiment precision loss.

Recommendation is to store time in QLop as microseconds since Epoch (01-01-1970 00:00:00)

Known time description

|.*Mission Name* |.time var name |. *units* |.DEPEND |.*LABLAXIS*|.FIELDNAM |.*CATDESC* |.Type |.*VIRTUAL*|.nb of records|_.VAR_NOTES|

|Cluster FGM |time_tags__CDFNAME |ms |0 |UT |Universal Time |Interval centred time tag |CDF_EPOCH | |normal |field missing|

|Cluster HIA |time_tags__CDFNAME |ms |0 |UT |Center Time |Interval centred time tag |CDF_EPOCH | |normal |field missing|

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|Themis Efi,SCM |VARNAME_time |sec |TIME |UT |Same as time var name|UTC, in seconds sinc 01-Jan-1970 00:00:00|CDF_DOUBLE | |normal |Unleaped seconds|

|Themis Efi,SCM |VARNAME_epoch |field missing|0 |UT |Same as time var name|Unrelated |CDF_EPOCH |true |0 |field missing|

|Themis Efi,SCM |VARNAME_dot0_epoch0|msec