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	Date 27/1102	Référence HP-ASPI-LT-2327	

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Object : Herschel / Planck - Calibration

REF1 : SCOS-2000 - Database Import ICD - S2K-MCS-ICD-ICD-0001-TOS-CGI - Issue 5.1
 REF2 : SCOS-2000 - Synthetic parameters SUM - S2K-MCS-SUM-0019-TOS-GCI - Issue 3.0

Dear Sir,

For analogue parameter calibration, SCOS current status (Issue 2.3) offers the following possible implementations according to REF1 :

. Numerical calibration (there is no limitations on the number of points),

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. Polynomial function limited to 4th order.

In dedicated cases (and I suppose limited cases : in order not to multiply by two the number of parameters and to avoid potential performance problems) calibration could be emulated by using synthetic parameters. But even with synthetic parameters there are some limitations : for instance Log function is not supported according to REF2.

We have been required by Astrium to implement new calibration type in order to satisfy specific needs of Herschel CRYO temperatures acquisition by the CCU. This need is justified by the fact that there are approximately 100 parameters concerned by this new type of calibration and it would be a lot a work to enter and maintain those calibrations using numerical calibration. The calibration formula required is :

$$T(R) = 1 / [a0 + a1 * \log (R) + a2 * (\log (R))^{**2}]$$

This implementation would required the following modifications to be implemented :

- Data base to support a new calibration type and associated a0, a1 and a2 coefficients,
- The CCS to support this new calibration type in real time and (TBC) possible on-line modification of a0, a1 and a2 coefficients.

An other possibility is to add the function in the OL or to link C++ code (TBC).

Before to decide what and how to do, we require you to answer to the following questions, in order to check if other calibration types shall be implemented :

- 1 Do you have specific calibrations (mainly for CRYO temperature acquisition, but perhaps for other acquisitions also) which cannot be entered using current SCOS-2000 capabilities ?
- 2 If yes to question 1, how many parameters are concerned and which type of calibration should be implemented ?
- 3 If yes to question 1, which work around solution have you implemented (or you planned to) to satisfy those specific calibration needs at instrument level test ?

On our side, we have checked on Planck that the temperature acquisitions under ASP responsibility (interface instrument shield 3 - 50K) do not require additional calibration type (polynomial of order 4 is sufficient).

Please send your answer not latter than week 49, in order that, if any change is requested to CCS and / or database, it can be injected to our sub-contractors as soon as possible.

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Best regards.

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