N2 data : description

Préparé par:	**Frederic Baudin, Laurent Jorda, Reza Samadi Eric Michel**	
Accepté par:	**Michel Auvergne**	
Pour application:	**Annie Baglin**	

HISTORIQUE DES MODIFICATIONS DU DOCUMENT

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DOCUMENTS DE REFERENCES

Repère	Référence	Titre du document
DR1:		
DR2		

DIFFUSION

On the web page of the Mission archive at

idoc-corot.ias.u-psud.fr

N2 data : description

5/12/2007 V1.2

Tout ce que vous avez toujours voulu savoir sur le N2…

…ne figure pas encore dans ce doc mais on y travaille

Frédéric Baudin & Laurent Jorda
with the help of Réza Samadi & Eric Michel

1 N2 CONTENTS

1.1 General philosophy for N2 products

This data level corresponds to data « ready to use » by a scientist without a priori knowledge of the instrument. This means that data of this level should be easy to handle, and do not require the use of auxiliary data to use the main product : the Light Curves (LC). One consequence is that there should be much less different products at level N2 than at level N1.

However, some auxiliary information is always necessary. Some are gathered with the LC in the form of binary tables, or put in the header of the LC files. They provide information on observation timing, sky background, applied corrections, astrophysical characteristics of the target (spectral type, etc…).
To make the handling of data easy, the main products (the LC: AN2_STAR_*.FITS, EN2_STAR_MON*.FITS, EN2_STAR_CHR*.FITS) include, in addition to the LC, some tables :

-observation time-stamping,
-LC of the associate sky background (already substracted),
-correction applied to the star LC,
-etc…

and tables of flags indicating :

-spurious points in the time series,
-discontinuities detected in the time series,
-observation during SAA ,
-information on CCD windows and templates used for the observation.

The header of the *N2_STAR* files include :

-indexes of characterisation of the signal (activity index for EP data for ex.)
-astrophysical characteristics of the target (spectral type etc…)
-information on data treatment (pipeline version, etc…)

All N2 files are FITS files.

1.2 Warning

The process of data treatment will evolve with time (and with an improving knowledge of the data and the instrument). Thus the data format may also evolve with time. This document will be updated each time a modification in the data format appears.

1.3 N2 product list

AN2_STAR_<*COROTID*>_<*START*>_<*END*>	*AS Light Curves, 32s sampling, extracted from AN1_STAR data*
AN2_WINDESCRIPTOR_<*COROTID*>_<*START*>_<*END*>	*Characteristics and history of the window observation*
EN2_STAR_CHR_<*COROTID*>_<*START*>_<*END*>	*EP chromatic Light Curves, 32 or 512s sampling, extracted from EN1_STAR_CHR* data*
EN2_STAR_MON_<*COROTID*>_<*START*>_<*END*>	*EP monochromatic Light Curves, 32 or 512s sampling, extracted from EN1_STAR_MON* data*
EN2_WINDESCRIPTOR_<*COROTID*>_<*START*>_<*END*>	*Characteristics and history of the window observation*
AN2_STAR_IMAG_<*COROTID*>_<*START*>_<*END*>	*Light Curves from the "imagettes", extracted from AN1_IMAGETTE data.*
EN2_STAR_IMAG_<*COROTID*>_<*START*>_<*END*>	*Light Curves from the "imagettes", extracted from EN1_IMAGETTE data.*
N2_CONTEXT_<*START*>_<*END*>	*Time series of context variables (Satellite position, LOS…)*

1.4 Acronyms

AS : asteroseismology (channel)
EP : exo-planet (channel)

LR : Long Run
SR : Short Run
IR : Initial Run

CDC: Corot Data Center

EMI: Electro-Magnetic Interferences
LC : Light Curve
LOS: Line Of Sight
SAA : South Atlantic Anomaly
TBS : To Be Specified

1.5 Standard data types

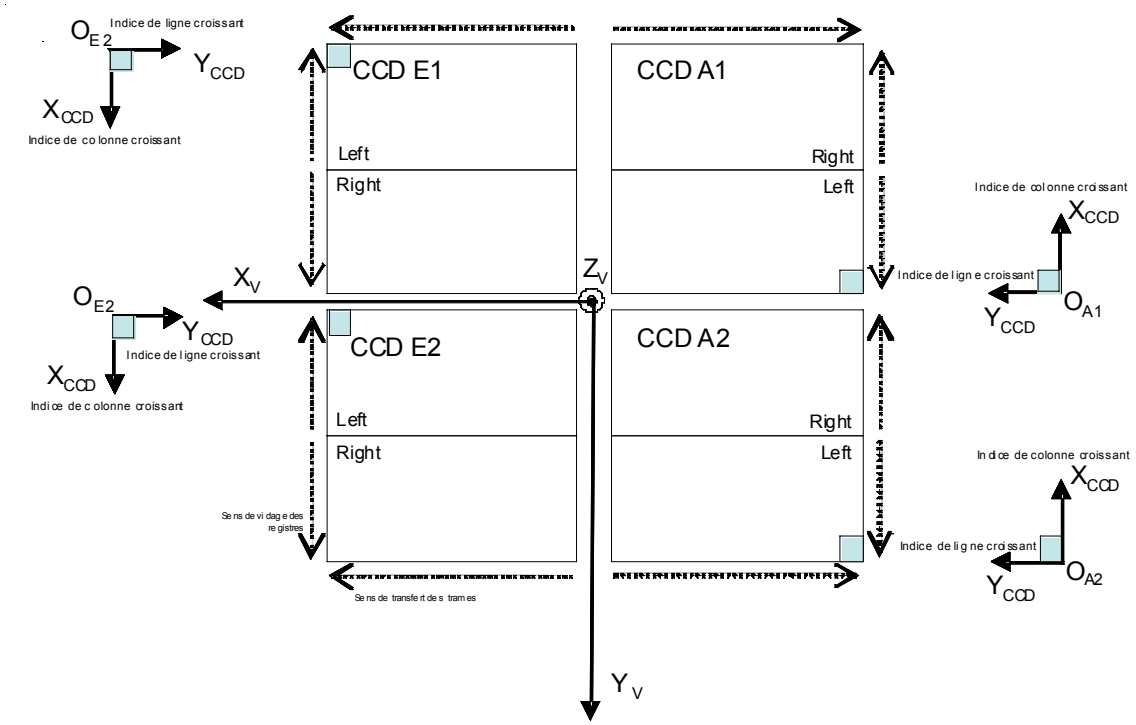
The standard data types assumed throughout this entire document are the following:

Type	Meaning	Size
Double	Floating point, double precision	64 bits
Float	Floating point, simple precision	32 bits
Long64	Long 64bits integer	64 bits
Long	Long integer	32 bits
Int	(short) Integer	16 bits
Byte	Byte	8 bits
String	String	Up to 70 chars in the headers of the FITS files

1.6 Coordinates in the CCD frame.

The CCD coordinates are defined in COR-SP-0.3-567-CNES.

All of the images or 'imagettes' are shown from the top of the CCD. The CCD coordinates are defined as shown in the following figure:



For each CCD, the coordinate system R_{CCD} (O_{CCD}, X_{CCD}, Y_{CCD}, Z_{CCD}) appears as follows:

Origin O_{CCD} is at the center of the pixel located at the corner of the image surface, as displayed above

1. Axis X_{CCD} with a positive orientation from left to right;
2. Axis Y_{CCD} is directed opposite to the direction of the frame transfer
3. Axis Z_{CCD} is the third axis of the triad and is directed toward space, *i.e.* toward the observer.

A given pixel is identified by its coordinates (*x,y*) where *x* is the subscript for the raw number and *y* is the line number.

For each CCD: $1 \leq x \leq 2048$ $1 \leq y \leq 2048$

The numbering of lines follows the direction of the frame: The first line is the first to be transferred into the buffer, and the first to be next transferred into the reader storage.

2 COMMON KEYWORDS FOR *N2_STAR PRODUCTS

TELESCOP

Description: Telescope name

Type: string

Value (fixed): 'COROT'

ORIGIN

Description: processing site

Type: string

Value (fixed): 'CDC'

CREA_DAT

Description: File generation date.

Type: string

Format: yyyy-mm-ddThh:mm:ss

FILENAME

Description: name of the file

Type: string

PIPE_VER

Description: Name and version of the process that generated the product.

Type: string

Format: -TBS-

STARTDAT

Description: UT date of the first measurement.

Type: string

Format: yyyy-mm-ddThh:mm:ss

END_DATE

Description: UT date of the last measurement

Type: string

Format: yyyy-mm-ddThh:mm:ss

COROTID

Description: ID of the CoRoT target.

Type: long integer

Range: Astero channel: 1 – 20 000; Exo Channel: 100 000 000 - 225 002 508 (from the EXODAT catalog: 100 000 000 - 199 000 000; from the USNO catalog: Center : 200 000 000 - 216 209 057 and Anti-center: 217 000 000 - 225 002 508).

RUN_CODE

Description: code of run during which the target was observed

Type: string, empty string if unknown

Format: <type>R<d><nn>, where <type> is a char and refers to the type of the run ('S': short, 'L': long, 'I': initial), 'R' refers to 'RUN', <d> refers to the direction with respect to the center of the Galaxy ('a': anticenter direction, 'c': center direction) and <nn> are two digits corresponding to the run number. In the case of tests and qualification tests, the format of this field is: <type><nnn> where <type> can be 'EQ' for test or 'VS' for a qualification test and <nnn> are three digits corresponding to the test number.

Examples: "LRa01", "LRa02", "SRc01", "IRa01", etc...

HLFCCDID

Description: reference of the half CCD from which the products originate.

Type: string with four chars

Example: 'E1R' for the right (**R**) CCD Number **1** of the **E**xo-planet channel.

ALPHA, DELTA

Description: Right ascension and declination of the star (Equinox 2000 TBC)

Type: double

Unit: degree (decimal)

3 COMMON BINARY TABLE EXTENSIONS FOR *N2_STAR PRODUCTS

DATEJD

Description: dates of the end of the measurements in the satellite reference frame, in CoRoT Julian day, 32s or 512s (exo) sampling. For EN2* products, this date corresponds to the end of the 32 sec exposure for 32 sec products and the end of the 1st exposure (of 16) of 32 sec in the case of 512 sec products.

Type: double float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

DATEJDHEL

Description: dates of the end of the measurements in the heliocentric reference frame (giving an irregular sampling), in CoRoT Julian day, 32s mean sampling (astero) or 32 and 512 sec (exo). For EN2* products, this date corresponds to the end of the 32 sec exposure for 32 sec products and the end of the 1st exposure (of 16) of 32 sec in the case of 512 sec products.

Type: double float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

DATEJDHELREG

Description: dates of the measurements in the heliocentric reference frame, in CoRoT Julian day, with a strict regular 32s sampling

Type: double

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

4 AN2_STAR PRODUCT

4.1 Filename

AN2_STAR_<*COROTID*>_<*START*>_<*END*>

4.2 AN2_STAR header

It includes the common keywords (TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, COROTID, RUN_CODE, HLFCCDID, ALPHA, DELTA) plus the following :

STARNAME

Description: usual name of the star, from EXODAT/COROTSKY database

Type: string (20 char)

Example: alphaCen or HD456345

MAGNIT_V

Description: star magnitude V, from EXODAT/COROTSKY database

Type: float

ABSM_V

Description: absolute star magnitude V, from EXODAT/COROTSKY database

Type: float

COL_B-V

Description: color difference, from EXODAT/COROTSKY database

Type: float

SPECTYPE

Description: spectral type, from EXODAT/COROTSKY database

Type: string (5 char)

Ex: O, B, A…

SUBCLASS

Description: spectral subclass, from EXODAT/COROTSKY database

Type: string (5 char)

Ex : 1, 2, 3…

LUMCLASS

Description: luminosity class of the star, from EXODAT/COROTSKY database

Type: string (5 char)

Ex : I, II, III, …

TEFF

Description: star effective temperature, from EXODAT/COROTSKY database

Type: float

Unit : Kelvin

GRAVITY

Description: star gravity, from EXODAT/COROTSKY database

Type: float

Unit : none (log(g[m/s^2]))

METAL

Description: star metallicity, from EXODAT/COROTSKY database

Type: float

Unit : dex? (log(Fe/H)/[log(Fe/H)]$_{Sun}$)

LC_MEAN

Description: mean of the light curve (FLUXHELREG)

Type: float

Unit: electrons/sec

LC_RMS

Description: RMS of the light curve (FLUXHELREG)

Type: float

Unit: electrons/sec

NBHOTPIX

Description: number of hot pixels detected in the mask

Type: integer

4.3 AN2_STAR binary table extensions

In addition of the common binary table extension (DATEJD, DATEHEL), it includes the following :

DATEJD: see Section 3

RAWFLUX

Description: raw (N1) star intensity light curve sampled at 32s, summed all 1s measurements and then divided by valid exposures, yielding electron/sec),

corresponding to time measurements in DATEJD

Type: double

Unit: electrons/sec

RAWFLUXDEV

Description: standard deviation of star intensity measurements at 1s, used to compute RAWFLUX.

Type: double

Unit: electrons/sec

RAWSTATUS:

Description: flags indicating the status of measurements corresponding to DATEJD, following the generic description of STATUS (see Section 3)

BG

Description: background light curve (already substracted), corresponding to time measurements in DATEJD. Normalised to yield electron/px/sec.

Type: float

Unit: electrons/px/sec

DATEJDHEL : see Section 3

FLUXHEL

Description: star intensity light curve, corresponding to time measurements in DATEJDHEL (irregular sampling, 32s in average)

Type: double

Unit: electrons/sec

FLUXDEVHEL

Description: standard deviation of star intensity measurements at 1s, used to compute FLUXHEL.

Type: double

Unit: electrons/sec

STATUSHEL

Description: flags indicating the status of measurements corresponding to DATEJDHEL, following the generic description of STATUS (see Section 3)

DATEJDHELREG

Description: dates of the measurements in the heliocentric reference frame, in CoRoT Julian day, with a strict regular 32s sampling

Type: double

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

FLUXHELREG

Description: star intensity light curve, corresponding to time measurements in DATEHELREG (regular sampling of 32s)

Type: double

Unit: electrons/sec

FLUXDEVHELREG

Description: standard deviation of star intensity measurements at 1s, used to compute FLUXHELREG.

Type: double

Unit: electrons/sec

STATUSHELREG

Description: flags indicating the status of measurements corresponding to DATEJDHELREG, following the generic description of STATUS (see Section 3)

STATUS (description valid for RAWSTATUS, STATUSHEL, etc...)

Description: flags indicating the status of measurements corresponding to DATEJD

Type: unsigned long integer (32 bits)

bit 0	« false »	(0)	The data are valid flux measurement
bit 0	« true »	(1)	The data are considered as out of range (*e.g.* energetic particle impact or glitch). Corresponds to OVER=1 in N1 products
bit1	« true »	(2)	The data is invalid. Either the original value was a spare value (default value) or no images were accumulated (EXPORANK=0). Corresponds to

		OVER=2 in N1 products
bit2 « true »	(4)	Flux acquired when crossing SAA
bit3 « true »	(8)	Interpolated measurement
bit4 « true »	(16)	Discontinuity detected in the Light Curve
bit5 « true »	(32)	Discontinuity due to change of CCD mask
bit6 « true »	(64)	Flux extracted from imagette
bit7 « true »	(128)	New hot pixel detected
bit8 « true »	(256)	At the time of the data, the satellite was entering earth penombra (orbital event 3 : light to penombra transition). Corresponds to OVER=8 in N1 products
bit9 « true »	(512)	At the time of the data, the satellite was entering light (orbital event 6 : penombra to light transition). Corresponds to OVER=16 in N1 products
bit10 « true »	(1024)	The jitter excursion was greater than the maximum authorized value. The original value is replaced by a calculated value. Corresponds to OVER=32 in N1 products

Unit: none
Remark: STATUS is a bit mask. This means that all these values can be combined. For instance STATUS = 13 means that the measurement is considered out of range, it was acquired when crossing the SAA, an dis replaced by an interpolated value.

5 AN2_WINDESCRIPTOR PRODUCT

This product aims at a rapid description of the characteristic and history of the observation. It will be produced only once per run for a given target. Thus, despite having a similar name than a N1 product, it is quite different from the latter.

5.1 Filename

AN2_WINDESCRIPTOR_<*COROTID*>_<*START*>_<*END*>

<*START*> and <*END*> are the start and end times of the observation run.

5.2 Header

It includes the common keywords (TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, COROTID, RUN_CODE, HLFCCDID, plus the following:

STARTDAT

Description: UT date of the beginning of the run

Type: string

Format: yyyy-mm-ddThh:mm:ss

END_DATE

Description: UT date of the end of the run

Type: string

Format: yyyy-mm-ddThh:mm:ss

5.3 Binary table extension

T_START_WIN: list of start time for the use of a given window for the target COROTID

Type: double float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

T_END_WIN: list of end time for the use of a given window for the target COROTID

Type: double float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

WIN_ID: list of the ID of the target windows.

Type: long

Range: Astero channel: 0 - 2047.

SIZEX/Y: window size along the X direction and the Y direction. SIZEX corresponds to the number of columns and SIZEY to the number of rows

Type: integer

ORIGINX/Y: origin of the target window on the CCD

Type: integer

MASK_ID: ID of the photometric mask associated with the target

Type: integer

Range: 1-5

MASK_SIZE: total number of pixel within the photometric mask

Type: integer

Unit: pixel

CCD_WINREF : Sub-image, of size (NXIMGREF, NYIMGREF) which pixel values represent the signal of the pixels inside the mask for a given target. Pixels not inside the mask have a signal equal to 0.E0. Pixel values are deduced from the 2 full images (A1 and A2) of the AS channel acquired at the beginning of each run. These images are corrected from the offset, gain and EMIs. The aim of this image is: (i) to get an accurate view of the contamination inside the mask, and (ii) to easily access the shape of the mask used for a given target.

Type : integer

Unit: electron/px/s

NX/YIMGREF: size of the sub-image **CCD_WINREF**

Type: integer

POSX/YIMGREF: X,Y position on the CCD of the bottom left corner of **CCD_WINREF**

Type: integer

6 AN2_STAR_IMAG PRODUCT

This product is mainly an intermediate product as the “imagettes” (when they exist, and with a poorer time sampling than plain light curves) will be used to build a light-curve which may be of better quality than the on-board computed LC as some better treatment may be applied.

6.1 Filename

AN2_STAR_IMAG_<*COROTID*>_<*START*>_<*END*>

6.2 AN2_STAR_IMAG header

In addition to the common keywords (TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, COROTID, RUN_CODE, HLFCCDID, ALPHA, DELTA, SPECTYPE), it includes the following :

STARNAME

Description: usual name of the star, from EXODAT/COROTSKY database

Type: string (20 char)

Example: alphaCen or HD456345

LC_MEAN

Description: mean of the light curve

Type: float

Unit: electrons

LC_RMS

Description: RMS of the light curve

Type: float

Unit: electrons

ORIGINX/Y: origin of the target window on the CCD

Type: integer

SIZEX/Y: size of the target window on the CCD

Type: integer

6.3 AN2_STAR_IMAG binary table extension

The common binary table extension (DATE, DATEJD) plus the following :

STARINTENSITY_IMAG

Description: star intensity light curve extracted from imagettes, 32s sampling

Type: double

Unit: electrons

BG_IMAG

Description: background light curve extracted from imagettes, 32s sampling

Type: float

Unit: electrons

7 EN2_STAR PRODUCTS

7.1 Filenames

EN2_STAR_CHR_<*COROTID*>_<*START*>_<*END*>,
EN2_STAR_MON_<*COROTID*>_<*START*>_<*END*>,

7.2 EN2_STAR common header

It includes the common keywords (TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, COROTID, RUN_CODE, HLFCCDID, ALPHA, DELTA) plus the following :

WINID

Description: WinID of the target when unique (-1 otherwise)

Type: long

Unit: no unit

CONTFACT

Description: contamination factor [0,1]

Type: float

Unit: no unit

EXPTIME

Description: exposure time (32s or 512s)

Type: integer

Unit: sec

CHRDEG

Description: degree of chromaticity

Type: float

Unit: none

ACTILEV

Description: level of activity

Type: float

Unit: none

VARCLAS1/2/3

Description: star variability classification extracted from the EXODAT data base. (exact definition to be included).

Type: string

PRBCLAS1/2/3

Description: probability associated to VARCLAS1/2/3

Type: float

MAGNIT_B/V/R/I

Description: star magnitude B/V/R/I, from EXODAT/COROTSKY database

Type: float

COLTEMP

Description: star color temperature, from EXODAT/COROTSKY database

Type: float

Unit : Kelvin

SPECTYPE

Description: star spectral type, from EXODAT/COROTSKY database. In case no spectral type is available, either “K5III” or “UNKNOWN”.

Type: string (5 char)

Example : O, B, A…

LUMCLASS

Description: star luminosity class, from EXODAT/COROTSKY database

Type: string (5 char)

Example : I, II, III…

NBHOTPIX

Description: number of hot pixels detected in the template

Type: integer

7.3 EN2_STAR_MON specific header

In addition to TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, COROTID, RUN_CODE, HLFCCDID, ALPHA, DELTA, SPECTYPE and CONTFACT, EXPTIME, CHRDEG, ACTILEV, EN2_STAR*MON header includes the following :

LC_MEAN

Description: mean of the light curve

Type: float

Unit: electrons/sec

LC_RMS

Description: RMS of the light curve

Type: float

Unit: electrons/sec

7.4 EN2_STAR_MON binary table extensions

The common binary table extension (DATEJD, DATEHEL, STATUS) plus the following :

WHITEFLUX

Description: The integrated white flux, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s. Then normalised to yield electron/sec.

Type: float

Unit: electron/sec

WHITEFLUXDEV

Description: standard deviation of star intensity measurements at 32s, used to compute WHITEFLUX when sampled at 512s.

Type: float

Unit: electrons/sec

BG

Description: background light curve (already substracted), 32s or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s. Then normalised to yield electron/sec.

Type: float

Unit: electrons/px/sec

RAWFLUX

Description: raw (N1) star intensity light curve, corresponding to time measurements in DATEJD

Type: float

Unit: electrons/sec

STATUS

Description: flags indicating the status of measurements corresponding to DATEJD

Type: unsigned long integer (32 bits)

bit0	« false »	(0)	The data is a valid flux measurement
bit0	« true »	(1)	Cosmic event detected by the N0-N1 pipeline
bit1	« true »	(2)	Spare value detected by the N0-N1 pipeline
bit2	« true »	(4)	Flux acquired when crossing SAA (N0-N1)
bit3	« true »	(8)	Flux perturbed by Earth eclipse (inbound)
bit4	« true »	(16)	Flux perturbed by Earth eclipse (outbound)
bit5	« true »	(32)	Flux acquired when crossing SAA (N1-N2)
bit7	« true »	(128)	New hot pixel detected
bit10	« true »	(1024)	Flux flagged as an “incorrect value” by the flight s/w (VALIDFLUX=1, when applicable)
bit11	« true »	(2048)	Flux flagged as an “incorrect value” by the flight s/w (VALIDFLUX=2, when applicable)

Unit: none

7.5 EN2_STAR_CHR specific header

In addition to TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, COROTID, RUN_CODE, HLFCCDID, ALPHA, DELTA, SPECTYPE and CONTFACT, EXPTIME, CHRDEG, ACTILEV, EN2_STAR*CHR header includes :

LC_MEAN_R/G/B

Description: mean of the light curve in R/G/B channel

Type: float

Unit: electrons/sec

LC_RMS_R/G/B

Description: RMS of the light curve in R/G/B channel

Type: float

Unit: electrons/sec

7.6 EN2_STAR_CHR binary table extensions

The common binary table extension (DATEJD, DATEHEL, STATUS) plus the following :

REDFLUX

Description: The integrated red flux, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s. Then normalised to yield electron/sec.

Type: float

Unit: electrons/sec

GREENFLUX

Description: The integrated green flux, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s. Then normalised to yield electron/sec.

Type: float

Unit: electrons/sec

BLUEFLUX

Description: The integrated blue flux, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s. Then normalised to yield electron/sec.

Type: float

Unit: electrons/sec

BLUE/GREEN/REDFLUXDEV

Description: Standard deviation of the 16 exposures of 32 sec added onboard in the three colored channels (for 512s sampling).

Type: float

Unit: electrons/sec

BG

Description: background light curve (already substracted), 32s or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s. Then normalised to yield electron/sec.

Type: float

Unit: electrons/px/sec

RAW_RED/GREEN/BLUE

Description: difference between the corresponding N1 light curve and RED/GREEN/BLUEFLUX (when applicable, -999. If not)

Type: float

Unit: electrons/sec

STATUS

Description: flags indicating the status of measurements corresponding to DATEJD

Type: unsigned long integer (32 bits)

bit0	« false »	(0)	The data is a valid flux measurement
bit0	« true »	(1)	Cosmic event detected by the N0-N1 pipeline
bit1	« true »	(2)	Spare value detected by the N0-N1 pipeline
bit2	« true »	(4)	Flux acquired when crossing SAA (N0-N1)
bit3	« true »	(8)	Flux perturbed by Earth eclipse (inbound)
bit4	« true »	(16)	Flux perturbed by Earth eclipse (outbound)

bit5	« true »	(32) Flux acquired when crossing SAA (N1-N2)
bit7	« true »	(128) New hot pixel detected
bit10	« true »	(1024) Flux flagged as an “incorrect value” by the flight s/w (VALIDFLUX=1, when applicable)
bit11	« true »	(2048) Flux flagged as an “incorrect value” by the flight s/w (VALIDFLUX=2, when applicable)

Unit: none

8 EN2_WINDESCRIPTOR PRODUCT

This product aims at a rapid description of the characteristic and history of the observation. It will be produced only once per run for a given target. Thus, despite having a similar name than a N1 product, it is quite different from the latter.

8.1 Filename

EN2_WINDESCRIPTOR_<*COROTID*>_<*START*>_<*END*>

<*START*> and <*END*> are the start and end times of the observation run.

8.2 Header

It includes the common keywords (TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, COROTID, RUN_CODE, HLFCCDID, plus the following:

STARTDAT

Description: UT date of the beginning of the run

Type: string

Format: yyyy-mm-ddThh:mm:ss

END_DATE

Description: UT date of the end of the run

Type: string

Format: yyyy-mm-ddThh:mm:ss

8.3 Binary table extension

T_START_WIN: list of start time for the use of a given window for the target COROTID

Type: float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

T_END_WIN: list of end time for the use of a given window for the target COROTID

Type: float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

EXPTIME: exposure time, indicating if the series is oversampled or not. If during the run, a change occurs in sampling (shifting from 512 to 32 or the converse), EXPTIME is set to -1.

Type: float

Unit: sec

WIN_ID: ID of the target window.

Type: long

Range: Exo Channel: 0 – 8191

SIZEX/Y : window size along the X direction and the Y direction. SIZEX corresponds to the number of columns and SIZEY to the number of rows

Type: integer

ORIGINX/Y: origin of the target window on the CCD

Type: integer

TPL_ID: ID of the template associated with the (exo) target

Type: integer

Range: 0 – 255

TPL_SIZE: total number of pixels within the template (i.e. total number of pixels used for the photometry)

Type: integer

Unit: pixel

TEMPLATE: Image of the template used to create the photometric ligthcurve.

Pixels with values of 1 are inside the mask.

NRPIX : number of “red” pixels (-1 if MONochromatic window)

Type: integer

Unit: pixel

NGPIX : number of “green” pixels (-1 if MONochromatic window)

Type: integer

Unit: pixel

NBPIX : number of “blue” pixels (-1 if MONochromatic window)

Type: integer

Unit: pixel

NB: location of the right edge of the blue part of the spectrum (-1 if MONochromatic window)

The blue part extends from N = 1 to N = NB.

The green part lies between N = NB + 1 and N = NR - 1

Type: integer

NR : location of the left edge of the red part of the spectrum (-1 if MONochromatic window)

The red part extends from N = NR to N = 15.

The green part lies between N = NB + 1 and N = NR - 1

Type: integer

CCD_WINREF : Pre-processed image of the neighbourhood of the target extracted from the full image acquired at the beginning of the run, of size (NXIMGREF, NYIMGREF) which pixel values represent the signal of the pixels inside the mask for a given target. Pixels not inside the mask have a signal equal to 0.E0. Pixel values are deduced from the 2 full images (E1 and E2) of the EP channel acquired at the beginning of each run. These images are corrected from the offset, gain and EMIs in the EXOWIND tool. The aim of this image is: (i) to get an accurate view of the contamination inside the mask, and (ii) to easily access the shape of the mask used for a given target.

Type : integer

Unit: electron/px/s

NX/YIMGREF: size of the sub-image **CCD_WINREF**

Type: integer

POSX/YIMGREF: X,Y position on the CCD of the bottom left corner of **CCD_WINREF**

Type: integer

9 EN2_STAR_IMAG PRODUCT

This product is mainly an intermediate product as the “imagettes” (when they exist, and with a poorer time sampling than plain light curves) will be used to build a light-curve which may be of better quality than the on-board computed LC as some better treatment may be applied.

9.1 Filename

EN2_STAR_IMAG_<*COROTID*>_<*START*>_<*END*>

9.2 EN2_STAR_IMAG header

In addition to the common keywords to all products (TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, COROTID, RUN_CODE, HLFCCDID, ALPHA, DELTA, SPECTYPE) plus the common EN2_STAR keywords (CONTFACT, CHRDEG, ACTILEV), it includes the following :

LC_MEAN_R/G/B

Description: mean of the light curve in R/G/B channel

Type: float

Unit: electrons

LC_RMS_R/G/B

Description: RMS of the light curve in R/G/B channel

Type: float

Unit: electrons

ORIGINX/Y: origin of the target window on the CCD

Type: integer

SIZEX/Y: size of the target window on the CCD

Type: integer

9.3 EN2_STAR_IMAG binary table extension

The common binary table extension (DATEJD, STATUS) plus the following :

REDFLUX_IMAG

Description: The integrated red flux extracted from imagettes, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s.

Type: double

Unit: electrons

GREENFLUX_IMAG

Description: The integrated green flux extracted from imagettes, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s.

Type: double

Unit: electrons

BLUEFLUX_IMAG

Description: The integrated blue flux extracted from imagettes, 32 or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s.

Type: double

Unit: electrons

BG_IMAG

Description: background light curve extracted from imagettes, 32s or 512s sampling. If partial oversampling at 32s in a product sampled at 512s, resampling at 512s.

Type: float

Unit: electrons/px

10 N2_CONTEXT PRODUCT

10.1 Filename

N2_CONTEXT_<*START*>_<*END*>

10.2 N2_CONTEXT header

It includes some common keywords : TELESCOP, ORIGIN, CREA_DAT, FILENAME, PIPE_VER, STARTDAT, END_DATE, RUN_CODE.

10.3 N2_CONTEXT binary table extensions

DATEJD

Description: dates of the end of the measurements in the satellite reference frame, in CoRoT Julian day, 32s or 512s (exo) sampling

Type: double float

Unit: CoRoT Julian day (origin 1 January 2000 12:00.00)

SATPOSX

Description: position of the satellite – X geocentric equ. J2000 (double)

Type: double

Unit: km

SATPOSY

Description: position of the satellite – Y geocentric equ. J2000 (double)

Type: double

Unit: km

SATPOSZ

Description: position of the satellite – Z geocentric equ. J2000 (double)

Type: double

Unit: km

SATLON

Description: longitude of the sub-Earth point (float)

Type: double

Unit: degree

SATLAT

Description: latitude of the sub-Earth point (float)

Type: double

Unit: degree

LOS

Description: line of sight vector [Psi,Theta,Phi] or [RA,DEC,ROLL] (to be checked with Fabio)

Type: double

Unit: degree