

FREND Status

Introduction

FREND products present in the Planetary Science Archive (PSA) come from two different sources: calibrated products are generated by FREND instrument team, all other products are generated at the Science Operations Centre at ESAC (European Space Astronomy Center). Further details can be found in the EAICD (ftp://psa.esac.esa.int/pub/mirror/ExoMars2016/em16_tgo_frd/document/EAICD/).

Latest Version:

- Raw and Partially Processed products: Version 2
- FREND Dosimeter Calibrated products: Version 1 to be released in 2021
- FREND Neutron Detector Calibrated products: Version 1 to be released in 2021

Note that the PSA stores all versions, so it's possible to retrieve e.g. version 1 of the raw products. It is advisable however to always use the latest version available.

Delivery Status

- Raw and partially processed products are generated daily
- Calibrated products are scheduled to be delivered by the FREND team approximately every six months
- FREND products will be publicly available based on a six month roll out plan (TBC) after peer reviews

FREND Filenames

FREND filenames follow the convention:

- *frd_processinglevel_datatype_(subinstrument)_time*

FREND Data Types

Primary Data	
<i>Processing Level</i>	<i>Description</i>
Raw	<p>Raw data as read from the instrument. Consists of housekeeping telemetry (engineering data), FREND Neutron Science data (counts in detectors), FREND Dosimeter Science data (radiation environment measurements). All 3 types of data are time series. This data product is produced automatically by ESAC.</p> <p>Examples:</p> <ul style="list-style-type: none">• Raw science neutron detector product: frd_raw_sc_n_20200303t180000-20200303t235959• Raw science dosimeter product: frd_raw_sc_d_20200328t120000-20200328t175959• Raw housekeeping product: frd_raw_hk_20200328t120000-20200328t175959
Partially Processed	<p>Only Housekeeping telemetry is processed to this level – all engineering units converted to physical units (temperatures, voltages, instrument time etc).</p> <p>This is the last data level for FREND Housekeeping.</p> <p>Example: frd_par_hk_20200303t180000-20200303t235959</p>
Calibrated	<p>For all 2 science types of data defined above: all engineering units converted to physical units (temperatures, voltages, instrument time etc). Instrument engineering effects are removed from scientific data (temperature drifts, detector on/off efficiency curves, effects based on SC altitude corrected etc). These are time series.</p> <p>Examples:</p> <ul style="list-style-type: none">• Dosimeter calibrated product: frd_cal_scdh_20190801t001100-20190822t094400• Neutron Detector: TBA

See the [EAICD](#) for more details.

Current Issues

Issue	Affects Version	Status
<p>PDS is changing its LID convention for instruments. This will require a change from</p> <ul style="list-style-type: none"> urn:esa:psa:context:instrument:frend.tgo <p>to</p> <ul style="list-style-type: none"> urn:esa:psa:context:instrument:tgo.frend <p>Coordination is required to make this update as it has an impact on ingestion and the PSA database. Coordination between all missions and instruments is required.</p>	1.x, 2.x	In analysis
The lid for the EAICD is incorrect and needs to be rectified with the lid contained in the products	1.x	In analysis
ExoMars namespace and instrument contexts are not yet registered in the PDS system, therefore the validator by default will not work. Workarounds are adding the missing items in file validate-1.23.1/resources/registered_context_products.json or running the validator skipping the check on context (--skip-context-validation)	-	-
The lids of calibrated products are currently under revision and will be changed to respect the format <instrument_acronym>[_<processing_level>][_<type>][_<subunit>][_<descriptor>	1.x	In analysis
NASA validator tool (https://nasa-pds.github.io/validate/) resolves the https PSA protocols with the latest Java version. If validate does not resolve the dictionaries, please consider updating your Java version	-	-

Fixed Issues

Issue	Affects Version	When Fixed	Data Processing Fix Version	PSA Fix Version
<p>The current context lid_reference</p> <ul style="list-style-type: none"> urn:nasa:pds:context:target:calibration.non_science <p>has been deprecated by PDS. The new context/LID will be:</p> <ul style="list-style-type: none"> urn:nasa:pds:context:target:calibrator.non_science 	1.x, 2.x	2020-04-06	DPS-3.8	Not Applicable
For older Raw products, the URLs pointing to PDS and PSA dictionaries are http instead of https. This has been corrected recently and newer products reflect the change. Older products will be aligned in the next bulk reprocessing. Note that for FRENED calibrated products the URL for the PDS schematron still points to http instead of https. This will be corrected for future deliveries.	1.x, 2.x	2020-01-30	DPS-3.4	Not Applicable
In the UI, for some products, the fields Wavelength Range and Instrument Type show the incorrect value of "Not Available".	2.x	May 2020	Not Applicable	PSA 5.9
Currently there are multiple problems associated with the 'on the fly' generated collection and bundle inventory files. The issues are understood, how to implement to the fix is in analysis.	1.x, 2.x	2020-10-19	Not Applicable	PSA 5.10