

P60 Archive Keywords

Derek Fox
August 14, 2003

Purpose

The purpose of this document is to specify the subset of header keywords, included in all FITS files generated by the robotic P60 observatory, that will be accessible to Archive users through the Archive's search interface.

1 Introduction

In order to enable advance construction of the searchable database that will be archiving all robotic P60 observations, we have met with the IPAC archive team and determined the full complement of FITS header keywords that will be used for archival search purposes.

This list is only a partial subset of the full set of header keywords that will be present in all P60 files – the subset that will be accepted as search parameters to the archive's web interface. We are continuing work on the specification of the full complement of header keywords, the first draft of which will be completed soon.

This set of searchable header keywords may be expanded in the future, but at a price to the performance of the archive database. In addition, it will generally not be possible to “retrofit” new keywords onto old FITS files once they are placed in the archive. For these reasons it is desirable to define a reasonable set of searchable keywords in advance.

2 Keywords

In this section we will group the searchable header keywords in several classes and discuss each class in turn.

2.1 Full WCS

The WCS for each image will be specified in the standard “CD Matrix” form, using the keywords given below. Note that raw data files will be in

multiextension FITS format (one extension per amplifier), while processed data files will be simple FITS files. For the raw data files, therefore, it will not be possible to have a strictly correct WCS in the initial header. Instead, we will add the dummy keywords **IAXIS1** and **IAXIS2** as specified below.

CTYPE1, CTYPE2 The type of astrometric projection for the first and second axes, set to **RA---TAN** and **DEC--TAN**, respectively, for all files.

CRPIX1, CRPIX2 Reference pixel location for the astrometric projection. These values will be floating-point numbers with values between 0 and 2049.

CRVAL1, CRVAL2 RA and Dec of the reference pixel in the astrometric projection. These values are given in decimal degrees.

CD1_1, CD1_2, CD2_1, CD2_2 Elements of the astrometric projection matrix, as usually defined. Values will be floating-point numbers giving angular degrees per pixel.

EQUINOX Equinox of the astrometric projection, set to 2000 for all files.

IAXIS1, IAXIS2 Dimensions of the active (exposed) CCD area – the equivalent of the FITS standard keywords **NAXIS1, NAXIS2**. These keywords will be provided in the initial header of the multiextension (raw) FITS files to allow the sky coverage of the image to be readily computed.

2.2 Proposal Information

Keywords to indicate the responsible proposal, and the role of the observation within the context of that proposal:

P60PRID A unique proposal alphanumeric identifier, for example, 2004B-SRK01, as established by the Keck-Palomar TAC.

P60PRNM The title of the proposal, truncated to 65 characters if necessary. Set to **CALIBRATION** for calibration observations.

P60PRPI Name of proposal PI.

P60PRTM The length of the proposal proprietary period, in months. Optional – the default will be for an infinite proprietary period. Zero for all calibration data.

OBJECT Proposer’s name for the object, or calibration target name for calibration observations. The IPAC archive team has expressed a desire for us to impose some standard object naming convention(s); we may wish to address this issue at some point.

2.3 Time of Observation

The nature of these keywords is to uniquely define the exposure start time; this single time is expressed in multiple ways which should all be mutually consistent. The civil date and time keywords have been specifically requested by IPAC.

OBSDATE Observation date (UT), as YYYY-MM-DD, with the year, month, and day given numerically.

OBSTIME Observation start time (UT), as HH:MM:SS.S

OBSMJD Observation MJD, as a floating point number.

OBSLST Observation LST, as HH:MM:SS.S

OBSCVDT Observation civil date, as YYYY-MM-DD

OBSCVTM Observation civil time, as HH:MM:SS.S

2.4 Technical Details

Keywords summarizing the technical details of the exposure:

DARK Boolean keyword indicating whether the shutter was open (F) or not (T).

IMGTYPE Keyword indicating the type of the observation, chosen from **BIAS**, **DARK**, **DOMEFLAT**, **SKYFLAT**, **FOCUS**, **POINTING**, **TRACKING**, **PHOTOSTD**, **ASTROSTD**, and **SCIENCE**. All values except for the **SCIENCE** exposures are intended to indicate calibration data.

FILTER Astronomical filter used for the exposure. Chosen from a fixed list which is not yet fully defined, but should include at a minimum: U B V R I u g r i z (case-sensitive; multiple letters are possible).

EXPTIME Exposure time. This will reflect the actual exposure time of the image, as recorded by the camera control software, rather than the requested exposure time (if different). Floating point, $0 \leq t \leq 1000$.

ALTITUDE, AZIMUTH Telescope pointing information, in decimal degrees.

AIRMASS Airmass for the exposure, $1 \leq AM \leq 20$.

HOURLANG Hour angle for the exposure, negative for hours East and positive for hours West, $-12 \leq HA \leq +12$.

MOONDEG Degrees from the moon (approximate).

2.5 Processed Files

Files that have been processed by the Image Analysis Pipeline will have additional keywords inserted in the header:

PROCESSD Boolean keyword indicating whether the file is a processed file (T) or not (F).

PROCVER Version number of the processing software used.

SEEING Estimated seeing quality, in arcsec; $0 \leq S \leq 20$.

SKY Estimated sky background for the observation, in ADU; $0 \leq Sky \leq 10^5$.

NSTARS Estimated number of astronomical objects present in the image, $0 \leq N \leq 10^6$.

EXTINCT Estimated atmospheric extinction for the image (in the appropriate filter). Potentially negative: $-5.0 \leq X \leq 20$.

PROCPROB Summary of any problems encountered with the file during processing, chosen from a fixed list (as yet undetermined) and set to “None” if none.