GMT Software and Controls FITS Keyword Dictionary

Release 1.4-1

Chien Y. Peng

Jul 19, 2018

Contents

CHAPTER

ONE

INTRODUCTION

This report provides a list of FITS header keywords used by the Data Processing Subsystem when processing telescope data and generating FITS data products.

CHAPTER

TWO

ACRONYMS

CHAPTER

THREE

STANDARD FITS KEYWORDS

Description: Keywords for a basic FITS standard header. In many cases, the keywords and descriptions are taken verbatim from 'Definition of the Flexible Image Transport System (FITS), Version 3.0'.

3.1 AUTHOR

Key: author

Info: Author(s) of data

Type: string

HDU: any

Description: The value field shall contain a character string identifying who compiled the information in the data associated with the header. This keyword is appropriate when the data originate in a published paper or are compiled from many sources. Also corresponds to IVOA 'DataID.Creator' Spectral Data Model.

3.2 BITPIX

Key: bitpix

Info: Bits per data value

Type: integer

HDU: any

Description: The value field shall contain an integer. The absolute value is used in computing the sizes of data structures. It shall specify the number of bits that represent a data value.

3.3 ' '

Key: blankkey

Info: Descriptive comment

Type: string

HDU: any

Description: Columns 1-8 contain ASCII blanks. This keyword has no associated value. Columns 9-80 may contain any ASCII text. Any number of card images with blank keyword fields may appear in a header. Blank field supplies comments to FITS file, useful for aesthetic purposes to provide a break between groups of related keywords in the header.

3.4 BLANK

Key: blank

Info: Value used for undefined array elements

Type: string

HDU: primary

Description: This keyword shall be used only in primary array headers or IMAGE extension headers with positive values of BITPIX (i.e., in arrays with integer data). Columns 1-8 contain the string, 'BLANK ' (ASCII blanks in columns 6-8). The value field shall contain an integer that specifies the representation of array values whose physical values are undefined.

3.5 BSCALE

Key: bscale

Info: Linear factor in scaling equation

Type: float

HDU: any

Description: This keyword shall be used, along with the BZERO keyword, when the array pixel values are not the true physical values, to transform the primary data array values to the true physical values they represent, using the equation: physical_value = BZERO + BSCALE * array_value. The value field shall contain a floating point number representing the coefficient of the linear term in the scaling equation, the ratio of physical value to array value at zero offset. The default value for this keyword is 1.0.

3.6 BUNIT

Key: bunit

Info: Physical units of the array values

Type: string

HDU: any

Description: The value field shall contain a character string, describing the physical units in which the quantities in the array, after application of BSCALE and BZERO, are expressed. The units of all FITS header keyword values, with the exception of measurements of angles, should conform with the recommendations in the IAU Style Manual. For angular measurements given as floating point values and specified with reserved keywords, degrees are the recommended units (with the units, if specified, given as 'deg'). Corresponds to IVOA 'o_unit'.

3.7 BZERO

Key: bzero

Info: Zero point in scaling equation

Type: float

HDU: any

Description: This keyword shall be used, along with the BSCALE keyword, when the array pixel values are not the true physical values, to transform the primary data array values to the true values using the equation: physical_value = BZERO + BSCALE * array_value. The value field shall contain a floating point number representing the physical value corresponding to an array value of zero. The default value for this keyword is 0.0.

3.8 COMMENT

Key: comment

Info: Descriptive comment

Type: string

HDU: any

Description: This keyword shall have no associated value; columns 9-80 may contain any ASCII text. Any number of COMMENT card images may appear in a header.

3.9 DATE

Key: date

Info: Date of file creation

Type: string

HDU: any

Description: The date on which the HDU was created, in the format specified in the FITS Standard. The old date format was 'yy/mm/dd' and may be used only for dates from 1900 through 1999. The new Y2K compliant date format is 'yyyy-mm-dd' or 'yyyy-mm-ddThh:mm:ss[.sss]'. This maps to IVOA 'obs_creation_date'. Also corresponds to the IVOA 'DataID.Date' Spectral Data Model.

3.10 DATAMAX

Key: datamax

Info: Maximum data value

Type: float

HDU: any

Description: The value field shall always contain a floating point number, regardless of the value of BITPIX. This number shall give the maximum valid physical value represented by the array, exclusive of any special values.

3.11 DATAMIN

Key: datamin

Info: Minimum data value

Type: float

HDU: any

Description: The value field shall always contain a floating point number, regardless of the value of BITPIX. This number shall give the minimum valid physical value represented by the array, exclusive of any special values.

3.12 DATE-OBS

Key: date_obs

Info: Date of the observation

Type: string

HDU: any

Description: The date of the observation, in the format specified in the FITS Standard. The old date format was 'yy/mm/dd' and may be used only for dates from 1900 through 1999. The new Y2K compliant date format is 'yyyy-mm-dd' or 'yyyy-mm-ddTHH:MM:SS[.sss]'. Use instead of TIME-OBS.

3.13 DOBS*n*

Key: dobs[*n*]

Info: Date of the observation

Type: string

HDU: any

Description: Similar to DATE-OBS except primary keyword for BINTABLE vector and pixel list alike.

3.14 END

Key: end

Info: Marks the end of the header keywords

Type:

HDU: any

Description: No associated value. Marks the logical end of the header. Columns 9-80 shall be filled with ASCII blanks.

3.15 EXTLEVEL

Key: extlevel

Info: Hierarchical level of the extension

Type: integer

HDU: extension

Description: The value field shall contain an integer, specifying the level in a hierarchy of extension levels of the extension header containing it. The value shall be 1 for the highest level; levels with a higher value of this keyword shall be subordinate to levels with a lower value. If the EXTLEVEL keyword is absent, the file should be treated as if the value were 1. This keyword is used to describe an extension and should not appear in the primary header.

3.16 EXTEND

Key: extend

Info: Indicates whether the FITS file contain extensions

Type: boolean

HDU: primary

Description: T or F indicating whether the FITS file is allowed to contain conforming extensions following the primary HDU. This keyword MUST NOT appear in XtensionFrame. Contains a logical value indicating whether the FITS file is allowed to contain conforming extensions following the primary HDU. This keyword may only appear in the primary header and must not appear in an extension header. If the value field is T then there may be conforming extensions in the FITS file following the primary HDU. This keyword is only advisory, so its presence with a value T does not require that the FITS file contains extensions, nor does the absence of this keyword necessarily imply that the file does not contain extensions.

3.17 NEXTEND

Key: nextend

Info: The number of standard extensions [To be Deleted?]

Type: integer

HDU: primary

Description: Number of standard extensions. The value field shall contain an integer giving the number of standard extensions contained in the FITS file. This keyword may only be used in the primary array header. [To be Deleted?]

3.18 EXTNAME

Key: extname

Info: Name of the extension

Type: string

HDU: extension

Description: The value field shall contain a character string, to be used to distinguish among different extensions of the same type, i.e., with the same value of XTENSION, in a FITS file. This keyword is used to describe an extension and should not appear in the primary header. The extension types are: SCI (science image), ERR (error image), DQ (data quality image), SAMP (number of sample), TIME (exposure time), EVENTS (photon event list), GTI (good time interval), WHT (weight image), CTX (context image).

3.19 EXTVER

Key: extver

Info: Version of the extension

Type: integer

HDU: extension

Description: The value field shall contain an integer, to be used to distinguish among different extensions in a FITS file with the same type and name, i.e., the same values for XTENSION and EXTNAME. The values need not start with 1 for the first extension with a particular value of EXTNAME and need not be in sequence for subsequent values. If the EXTVER keyword is absent, the file should be treated as if the value were 1. This keyword is used to describe an extension and should not appear in the primary header.

3.20 GCOUNT

Key: gcount

Info: Group count

Type: integer

HDU: extension

Description: The value field shall contain an integer that shall be used in any way appropriate to define the data structure, consistent with Eq. 5.2 in the FITS Standard. This keyword originated for use in FITS Random Groups where it specifies the number of random groups present. In most other cases this keyword will have the value 1. Must have the value 1 in the IMAGE, Table, and BINTABLE standard extensions.

3.21 GROUPS

Key: groups

Info: Indicates random groups structure

Type: boolean

HDU: extension

Description: The value field shall contain the logical constant T. The value T associated with this keyword implies that random groups records are present. This is deprecated for use outside of radio interferometry.

3.22 HISTORY

Key: history

Info: Processing history of the data

Type: string

HDU: any

Description: This keyword shall have no associated value; columns 9-80 may contain any ASCII text. The text should contain a history of steps and procedures associated with the processing of the associated data. Any number of HISTORY card images may appear in a header.

3.23 INSTRUME

Key: instrume

Info: Name of instrument

Type: string

HDU: any

Description: The value field shall contain a character string identifying the instrument used to acquire the data associated with the header. Corresponds to IVOA 'instrument_name'.

3.24 NAXIS

Key: naxis

Info: Number of axes

Type: integer

HDU: any

Description: The value field shall contain a non-negative integer no greater than 999, representing the number of axes in the associated data array. A value of zero signifies that no data follow the header in the HDU. In the context of FITS 'TABLE' or 'BINTABLE' extensions, the value of NAXIS is always 2.

3.25 NAXIS*n*

Key: naxisn[*n*]

Info: Size along the axis n dimension

Type: integer

HDU: any

Description: [NAXISn] The value field of this indexed keyword shall contain a non-negative integer, representing the number of elements along axis n of a data array. The NAXISn must be present for all values n = 1,. . . ,NAXIS, and for no other values of n. A value of zero for any of the NAXISn signifies that no data follow the header in the HDU. If NAXIS is equal to 0, there should not be any NAXISn keywords.

3.26 NAXIS1

Key: naxis1

Info: Size along the axis 1 dimension

Type: integer

HDU: any

Description: Size along the axis 1 dimension

3.27 NAXIS2

Key: naxis2

Info: Size along the axis 2 dimension

Type: integer

HDU: any

Description: Size along the axis 2 dimension

3.28 OBJECT

Key: object

Info: Name or type of observed object

Type: string

HDU: any

Description: The value field shall contain a character string giving a name or type of the object observed. Often 'TARGNAME' is used for target name, in which case 'OBJECT' can be used to specify the object category. If so, this is a list of object classes (or types) used by the SIMBAD, NED, or other IVOA vocabulary. This maps to IVOA 'target_class' Also corresponds to the IVOA 'Target.Name' Spectral Data Model.

3.29 OBSERVER

Key: observer

Info: Observer who acquired the data

Type: string

HDU: any

Description: The value field shall contain a character string identifying who acquired the data associated with the header.

3.30 ORIGIN

Key: origin

Info: Organization or person responsible for the data

Type: string

HDU: any

Description: The value field shall contain a character string identifying the organization, institution, or person, responsible for creating the FITS file. This maps to IVOA 'obs_creator_name'.

3.31 PCOUNT

Key: pcount

Info: Parameter Count

Type: integer

HDU: extension

Description: The value field shall contain an integer that shall be used in any way appropriate to define the data structure, consistent with Eq. 5.2 in the FITS Standard. This keyword was originated for use with FITS Random Groups and represented the number of parameters preceding each group. It has since been used in 'BINTABLE' extensions to represent the size of the data heap following the main data table. In most other cases its value will be zero. Must have value of 0 for IMAGE and TABLE extensions. In BINTABLE, the value specifies the number of bytes that follow the main data table in the supplemental data area called the heap. This keyword is also used in the random groups structure to specify the number of parameters preceding each array in a group.

3.32 PSCAL*n*

Key: pscal[*n*]

Info: Parameter scaling factor

Type: float

HDU: extension

Description: [PSCALn] This keyword is reserved for use within the FITS Random Groups structure. This keyword shall be used, along with the PZEROn keyword, when the nth FITS group parameter value is not the true physical value, to transform the group parameter value to the true physical values it represents, using the equation, physical_value = PZEROn + PSCALn * group_parameter_value. The value field shall contain a floating point number representing the coefficient of the linear term, the scaling factor between true values and group parameter values at zero offset. The default value for this keyword is 1.0.

3.33 PTYPE*n*

Key: ptype[*n*]

Info: Parameter scaling factor

Type: string

HDU: extension

Description: [PTYPEn] This keyword is reserved for use within the FITS Random Groups structure. The value field shall contain a character string giving the name of parameter n. If the PTYPEn keywords for more than one value of n have the same associated name in the value field, then the data value for the parameter of that name is to be obtained by adding the derived data values of the corresponding parameters. This rule provides a mechanism by which a random parameter may have more precision than the accompanying data array elements; for example, by summing two 16-bit values with the first scaled relative to the other such that the sum forms a number of up to 32-bit precision.

3.34 PZERO*n*

Key: pzero[*n*]

Info: Parameter scaling zero point

Type: float

HDU: extension

Description: [PZEROn] This keyword is reserved for use within the FITS Random Groups structure. This keyword shall be used, along with the PSCALn keyword, when the nth FITS group parameter value is not the true physical value, to transform the group parameter value to the physical value. The value field shall contain a floating point number, representing the true value corresponding to a group parameter value of zero. The default value for this keyword is 0.0. The transformation equation is as follows: physical_value = PZEROn + PSCALn * group_parameter_value.

3.35 REFERENC

Key: referenc

Info: Bibliographic reference

Type: string

HDU: any

Description: The value field shall contain a character string citing a reference where the data associated with the header are published. For IVOA this is a forward link to major publications which reference the dataset. This corresponds to IVOA 'bib_reference'.

3.36 SIMPLE

Key: simple

Info: Indicates whether the file conforms to the standard

Type: boolean

HDU: primary

Description: The SIMPLE keyword is required to be the first keyword in the primary header of all FITS files. The value field shall contain a logical constant with the value T if the file conforms to the standard. This keyword is mandatory for the primary header and is not permitted in extension headers. A value of F signifies that the file does not conform to this standard.

3.37 TBCOL*n*

Key: tbcol[*n*]

Info: Beginning column number

Type: integer

HDU: extension

Description: The value field of this indexed keyword shall contain an integer specifying the column in which field n starts in an ASCII TABLE extension. For tables, The TBCOLn keywords must be present for all values n=1 ... TFIELDS, and for no other values of n. The value contains an integer specifying the column in which field n starts. The first column of a row is numbered 1.

3.38 TDIM*n*

Key: tdim[*n*]

Info: Dimensionality of the array

Type: string

HDU: extension

Description: [TDIMn] The value field of this indexed keyword shall contain a character string describing how to interpret the contents of field n as a multidimensional array, providing the number of dimensions and the length along each axis. The form of the value is not further specified by the Standard. A proposed convention is described in Appendix B.2 of the FITS Standard in which the value string has the format '(l,m,n...)' where l, m, n,... are the dimensions of the array. The data are ordered such that the array index of the first dimension given (l) is the most rapidly varying and that of the last dimension given is the least rapidly varying.

3.39 TDISP*n*

Key: tdisp[*n*]

Info: Display format

Type: string

HDU: extension

Description: [TDISPn] The value field of this indexed keyword shall contain a character string describing the format recommended for the display of the contents of field n. If the table value has been scaled, the physical value shall be displayed. All elements in a field shall be displayed with a single, repeated format. For purposes of display, each byte of bit (type X) and byte (type B) arrays is treated as an unsigned integer. Arrays of type A may be terminated with a zero byte. Only the format codes in Table 8.6, discussed in section 8.3.4 of the FITS Standard, are permitted for encoding. The format codes must be specified in upper case. If the Bw.m, Ow.m, and Zw.m formats are not readily available to the reader, the Iw.m display format may be used instead, and if the ENw.d and ESw.d formats are not available, Ew.d may be used. The meaning of this keyword is not defined for fields of type P in the Standard but may be defined in conventions using such fields.

3.40 TELESCOP

Key: telescop

Info: Name of telescope

Type: string

HDU: any

Description: The value field shall contain a character string identifying the telescope used to acquire the data associated with the header. This can correspond to IVOA 'facility_name', but another IVOA specific FITS keyword exists ('facility') that is more direct.

3.41 TFIELDS

Key: tfields

Info: Number of columns in the table

Type: integer

HDU: extension

Description: The value field shall contain a non-negative integer representing the number of fields in each row of a 'TABLE' or 'BINTABLE' extension. The maximum permissible value is 999.

3.42 TFORM*n*

Key: tform[*n*]

Info: Column data format

Type: string

HDU: extension

Description: [TFORMn] The value field of this indexed keyword shall contain a character string describing the format in which field n is encoded in a 'TABLE' or 'BINTABLE' extension. The TFORMn keywords must be present for all values n=1…TFIELDS, and for no other values of n.

3.43 THEAP

Key: theap

Info: Offset to starting data heap address

Type: integer

HDU: extension

Description: The value field of this keyword shall contain an integer providing the separation, in bytes, between the start of the main data table and the start of a supplemental data area called the heap. The default value, which is also the minimum allowed value, shall be the product of the values of NAXIS1 and NAXIS2. This keyword shall not be used if the value of PCOUNT is zero. A proposed application of this keyword is presented in Appendix B.1 of the FITS Standard.

3.44 TNULL*n*

Key: tnull[*n*]

Info: Value used to indicate undefined table element

Type: string

HDU: extension

Description: [TNULLn] In ASCII 'TABLE' extensions, the value field for this indexed keyword shall contain the character string that represents an undefined value for field n. The string is implicitly blank filled to the width of the field. In binary 'BINTABLE' table extensions, the value field for this indexed keyword shall contain the integer that represents an undefined value for field n of data type B, I, or J. The keyword may not be used in 'BINTABLE' extensions if field n is of any other data type.

3.45 TSCAL*n*

Key: tscal[*n*]

Info: Linear data scaling factor

Type: float

HDU: extension

Description: [TSCALn] This indexed keyword shall be used, along with the TZEROn keyword, when the quantity in field n does not represent a true physical quantity. The value field shall contain a floating point number representing the coefficient of the linear term in the equation, physical_value = TZEROn + TSCALn * field_value, which must be used to compute the true physical value of the field, or, in the case of the complex data types C and M, of the real part of the field with the imaginary part of the scaling factor set to zero. The default value for this keyword is 1.0. This keyword may not be used if the format of field n is A, L, or X.

3.46 TTYPE*n*

Key: ttype[*n*]

Info: Column name

Type: string

HDU: extension

Description: [TTYPEn] The value field for this indexed keyword shall contain a character String, giving the name of field n. It is recommended that only letters, digits, and underscore (hexadecimal code 5F, ('_') be used in the name. String comparisons with the values of TTYPEn keywords should not be case sensitive. The use of identical names for different fields should be avoided.

3.47 TUNIT*n*

Key: tunit[*n*]

Info: Column units

Type: string

HDU: extension

Description: [TUNITn] The value field shall contain a character string describing the physical units in which the quantity in field n, after any application of TSCALn and TZEROn, is expressed. The units of all FITS header keyword values, with the exception of measurements of angles, should conform with the recommendations in the IAU Style Manual. For angular measurements given as floating point values and specified with reserved keywords, degrees are the recommended units (with the units, if specified, given as 'deg').

3.48 TZERO*n*

Key: tzero[*n*]

Info: Column scaling zero point

Type: float

HDU: extension

Description: [TZEROn]This indexed keyword shall be used, along with the TSCALn keyword, when the quantity in field n does not represent a true physical quantity. The value field shall contain a floating point number representing the true physical value corresponding to a value of zero in field n of the FITS file, or, in the case of the complex data types C and M, in the real part of the field, with the imaginary part set to zero. The default value for this keyword is 0.0. This keyword may not be used if the format of field n is A, L, or X. This indexed keyword is used with TSCALn keyword to linearly scale the values in the table field n to transform them into physical values using: physical_value = TZEROn + TSCALn * field_value.

3.49 XTENSION

Key: xtension

Info: Marks beginning of new HDU

Type: string

HDU: extension

Description: Required to be the first keyword of all image (XTENSION= 'IMAGE ')and table (XTENSION= 'BINTABLE' or XTENSION= 'TABLE ') extensions. The value field shall contain a character string giving the name of the extension type. This keyword is mandatory for an extension header and must not appear in the primary header. For an extension that is not a standard extension, the type name must not be the same as that of a standard extension.

3.50 WCSAXES

Key: wcsaxes

Info: The number of axes in the WCS description

Type: integer

HDU: all

Description: [integer; default: NAXIS, or larger of WCS indexes i or j]. Number of axes in the WCS description. This keyword, if present, must precede all WCS keywords except NAXIS in the HDU. The value of WCSAXES may exceed the number of pixel axes for the HDU.

3.51 CTYPE*ia*

Key: ctype[*i*][*a*]

Info: Name of the coordinate axis

Type: string

HDU: all

Description: [CTYPEia] The value field shall contain a character string, giving the name of the coordinate represented by axis n. Any coordinate type that is not covered by the standard or an officially recognized FITS convention shall be taken to be linear. All non-linear coordinate system names must be expressed in '4–3' form: the first four characters specify the coordinate type, the fifth character is a hyphen ('-'), and the remaining three characters specify an algorithm code for computing the world coordinate value. Coordinate types with names of less than four characters are padded on the right with hyphens, and algorithm codes with less than three characters are padded on the right with blanks. Algorithm codes should be three characters.

3.52 CTYPE1

Key: ctype1

Info: Coordinate type for the x-axis

Type: string

HDU: all

Description: Coordinate type for the x-axis

3.53 CTYPE2

Key: ctype2

Info: Coordinate type for the y-axis

Type: string

HDU: all

Description: Coordinate type for the y-axis

3.54 *i*CTYP*n*

Key: [*i*]ctyp[*n*]

Info: Name of the coordinate axis

Type: string

HDU: extension

Description: [iCTYPn] Similar to CTYPEia except primary keyword for BINTABLE vector.

3.55 *i*CTY*n*

Key: [*i*]cty[*n*]

Info: Name of the coordinate axis

Type: string

HDU: extension

Description: [iCTYn] Alternative keyword for iCTYPn for BINTABLE vector.

3.56 TCTYP*n*

Key: tctyp[*n*]

Info: Name of the coordinate axis

Type: string

HDU: extension

Description: [TCTYPn] Similar to CTYPEia except primary keyword for pixel list.

3.57 TCTY*na*

Key: tcty[*n*][*a*]

Info: Name of the coordinate axis

Type: string

HDU: extension

Description: [TCTYna] Alternative keyword for TCTYPn for pixel list.

3.58 CUNIT*ia*

Key: cunit[*i*][*a*]

Info: Units of CRVAL and CDELT

Type: string

HDU: primary

Description: [CUNITia] Physical units of CRVAL and CDELT for axis i. Note that units should always be specified. Units for celestial coordinate systems defined in this Standard must be degrees.

3.59 *i*CUNI*n*

Key: [*i*]cuni[*n*]

Info: Units of CRVAL and CDELT

Type: string

HDU: extension

Description: [iCUNIn] Similar to CUNITia except primary keyword for BINTABLE vector.

3.60 *i*CUN*na*

Key: [*i*]cun[*n*][*a*]

Info: Units of CRVAL and CDELT

Type: string

HDU: extension

Description: [iCUNna] Same as iCUNIn except alternative keyword for BINTABLE vector.

3.61 TCUNI*n*

Key: tcuni[*n*]

Info: Units of CRVAL and CDELT

Type: string

HDU: any

Description: [TCUNIn] Similar to CUNITia except primary keyword for pixel list or table.

3.62 TCUN*na*

Key: tcun[*n*][*a*]

Info: Units of CRVAL and CDELT

Type: string

HDU: extension

Description: [TCUNna] Same as iCUNIn except alternative keyword for pixel list or table.

3.63 CRPIX*ja*

Key: crpix[*j*][*a*]

Info: Coordinate system reference pixel

Type: float

HDU: primary

Description: [CRPIXja] The value field shall contain a floating point number, identifying the location of a reference point along axis n, in units of the axis index. This value is based upon a counter that runs from 1 to NAXISn with an increment of 1 per pixel. The reference point value need not be that for the center of a pixel nor lie within the actual data array. Use comments to indicate the location of the index point relative to the pixel.

3.64 *j*CRPX*n*

Key: [*j*]crpx[*n*]

Info: Coordinate system reference pixel

Type: float

HDU: extension

Description: [jCRPXn] Similar to CRPIXja except primary keyword for BINTABLE vector.

3.65 *j*CRP*na*

Key: [*j*]crp[*n*][*a*]

Info: Coordinate system reference pixel

Type: float

HDU: extension

Description: [jCRPna] Same as jCRPXn except alternative keyword for BINTABLE vector.

3.66 TCRPX*n*

Key: tcrpx[*n*]

Info: Coordinate system reference pixel

Type: float

HDU: all

Description: [TCRPXn] Similar to CRPIXja except primary keyword for pixel list or table.

3.67 TCRP*na*

Key: tcrp[*n*][*a*]

Info: Coordinate system reference pixel

Type: float

HDU: extension

Description: [TCRPna] Same as jCRPXn except alternative keyword for pixel list or table.

3.68 CRVAL*ia*

Key: crval[*i*][*a*]

Info: Coordinate system value at reference pixel

Type: float

HDU: all

Description: [CRVALia] The value field shall contain a floating point number, giving the value of the coordinate specified by the CTYPEn keyword at the reference point CRPIXn. Units must follow the prescriptions of section 5.3 of the FITS Standard.

3.69 CRVAL1

Key: crval1

Info: x-coordinate value at reference pixel

Type: float

HDU: primary

Description: x-coordinate value at reference pixel

3.70 CRVAL1

Key: crval2

Info: y-coordinate value at reference pixel

Type: float

HDU: primary

Description: y-coordinate value at reference pixel

3.71 *i*CRVL*n*

Key: [*i*]crvl[*n*]

Info: Coordinate system value at reference pixel

Type: float

HDU: extension

Description: [iCRVLn] Similar to CRVALia except primary keyword for BINTABLE vector.

3.72 *i*CRV*na*

Key: [*i*]crv[*n*][*a*]

Info: Coordinate system value at reference pixel

Type: float

HDU: extension

Description: [iCRVna] Alternative keyword for iCRVLn for BINTABLE vector.

3.73 TCRVL*n*

Key: tcrvl[*n*]

Info: Coordinate system value at reference pixel

Type: float

HDU: any

Description: [TCRVLn] Similar to CRVALia except primary keyword for pixel list or table.

3.74 TCRV*na*

Key: tcrv[*n*][*a*]

Info: Coordinate system value at reference pixel

Type: float

HDU: any

Description: [TCRVna] Alternative keyword for iCRVLn for pixel list or table.

3.75 CDELT*na*

Key: cdelt[*n*][*a*]

Info: Coordinate increment along axis

Type: float

HDU: primary

Description: [CDELTna] The value field shall contain a floating point number giving the partial derivative of the coordinate specified by the CTYPEn keywords with respect to the pixel index, evaluated at the reference point CRPIXn, in units of the coordinate specified by the CTYPEn keyword. These units must follow the prescriptions of section 5.3 of the FITS Standard.

3.76 *i*CDLT*n*

Key: [*i*]cdlt[*n*]

Info: Coordinate increment along axis

Type: float

HDU: extension

Description: [iCDLTn] Similar to CDELTi except primary keyword for BINTABLE vector.

3.77 *i*CDE*na*

Key: [*i*]cde[*n*][*a*]

Info: Coordinate increment along axis

Type: float

HDU: extension

Description: [iCDEna] Alternative keyword for iCDLTn for BINTABLE vector.

3.78 TCDLT*n*

Key: tcdlt[*n*]

Info: Coordinate increment along axis

Type: float

HDU: any

Description: [TCDLTn] Similar to CDELTi except primary keyword for pixel list.

3.79 TCDE*na*

Key: tcde[*n*][*a*]

Info: Coordinate increment along axis

Type: float

HDU: any

Description: [TCDEna] Alternative keyword for TCDLTn for pixel list or table.

3.80 CROTA*i*

Key: crota[*i*]

Info: [Deprecated] Coordinate system rotation angle

Type: float

HDU: primary

Description: [CROTAi] This keyword is used to indicate a rotation from a standard coordinate system described by the CTYPEn to a different coordinate system in which the values in the array are actually expressed. Rules for such rotations are not further specified in the Standard; the rotation should be explained in comments. The value field shall contain a floating point number giving the rotation angle in degrees between axis n and the direction implied by the coordinate system defined by CTYPEn. Further use of this keyword is deprecated, in favor of the newer formalisms that use the CDi_j or PCi_j keywords to define the rotation.

3.81 *i*CROT*n*

Key: [*i*]crot[*n*]

Info: [Deprecated] Coordinate system rotation angle

Type: float

HDU: extension

Description: [iCROTn] Similar to CROTAi except primary keyword for BINTABLE vector.

3.82 TCROT*n*

Key: tcrot[*n*]

Info: [Deprecated] Coordinate system rotation angle

Type: float

HDU: any

Description: [TCROTn] Similar to CROTAi except primary keyword for pixel list or table.

3.83 PC*i*_*ja*

Key: pc[*i*]_[*j*][*a*]

Info: Coordinate transformation coefficient

Type: float

HDU: primary

Description: [PCi_ja] [floating point; defaults: 1.0 when i = j, 0.0 otherwise]. Linear transformation matrix between pixel axes j and intermediate coordinate axes i. The PCi_j matrix must not be singular.

3.84 *ij*PC*na*

Key: [*i*][*j*]pc[*n*][*a*]

Info: Coordinate transformation coefficient

Type: float

HDU: extension

Description: [ijPCna] Similar to PCi_ja except this is keyword for BINTABLE vector.

3.85 TPC*n*_*ka*

Key: tpc[*n*]_[*k*][*a*]

Info: Coordinate transformation coefficient

Type: float

HDU: any

Description: [TPCn_ka] Similar to PCi_ja except this is keyword for pixel list or table.

3.86 TP*n_ka*

Key: tp[*n*]_[*k*][*a*]

Info: Coordinate transformation coefficient

Type: float

HDU: any

Description: [TPn_ka] Similar to PCi_ja except this is also keyword for pixel list or table.

3.87 CD*i_ja*

Key: cd[*i*]_[*j*][*a*]

Info: Linear transformation matrix between axes i and j

Type: float

HDU: primary

Description: [CDi_ja] [floating point; defaults: 0.0, but see below]. Linear transformation matrix (with scale) between pixel axes j and intermediate coordinate axes i. This nomenclature is equivalent to PCi j when CDELTi is unity. The CDi_j matrix must not be singular. Note that the CDi_j formalism is an exclusive alternative to PCi_j, and the CDi_j and PCi_j keywords must not appear together within an HDU.

3.88 CD1_1

Key: cd1_1

Info: Projection of unit vector of axis 1 of one coordinate system with respect to axis 1 of the other coordinate system

Type: float

HDU: primary

Description: When two coordinate axes are rotated with respect to each other, e.g. North with respect to x-axis, this keyword gives the projection of unit vector of axis 1 (e.g. N) of one system with respect to the axis 1 (e.g. x) of the other.

3.89 CD1_2

Key: cd1_2

Info: Projection of unit vector of axis 1 of one coordinate system with respect to axis 2 of the other coordinate system

Type: float

HDU: primary

Description: When two coordinate axes are rotated with respect to each other, e.g. North with respect to x-axis, this keyword gives the projection of unit vector of axis 1 (e.g. N) of one system with respect to the axis 2 (e.g. y) of the other.

3.90 CD2_1

Key: cd2_1

Info: Projection of unit vector of axis 2 of one coordinate system with respect to axis 1 of the other coordinate system

Type: float

HDU: primary

Description: When two coordinate axes are rotated with respect to each other, e.g. South with respect to x-axis, this keyword gives the projection of unit vector of axis 2 (e.g. S) of one system with respect to the axis 1 (e.g. x) of the other.

3.91 CD2_2

Key: cd2_2

Info: Projection of unit vector of axis 2 of one coordinate system with respect to axis 2 of the other coordinate system

Type: float

HDU: primary

Description: When two coordinate axes are rotated with respect to each other, e.g. South with respect to y-axis, this keyword gives the projection of unit vector of axis 2 (e.g. S) of one system with respect to the axis 2 (e.g. y) of the other.

3.92 *ij*CD*na*

Key: [*i*][*j*]cd[*n*][*a*]

Info: Linear transformation matrix between axes i and j

Type: float

HDU: extension

Description: [ijCDna] Similar to CDi_ja except this is keyword for BINTABLE vector.

3.93 TCD*n_ka*

Key: tcd[*n*]_[*k*][*a*]

Info: Linear transformation matrix between axes i and j

Type: float

HDU: extension

Description: [TCDn_ka] Similar to CDi_ja except this is keyword for pixel list or table.

3.94 TC*n_ka*

Key: tc[*n*]_[*k*][*a*]

Info: Linear transformation matrix between axes i and j

Type: float

HDU: extension

Description: [TCn_ka] Similar to CDi_ja except this is also a keyword for pixel list or table.

3.95 PV*i_ma*

Key: pvi[*i*]_[*m*][*a*]

Info: Value for intermediate WCS axis i

Type: float

HDU: primary

Description: [PVi_ma] [floating point]. Numeric parameter values for intermediate world coordinate axis i, where m is the parameter number. Leading zeros must not be used, and m may have only values in the range 0 through 99, and that are defined for the particular non-linear algorithm.

3.96 *i*PV*n_ma*

Key: [0-9]pv[*i*]_[*n*][*m*]

Info: Value for intermediate WCS axis i

Type: float

HDU: extension

Description: [iPVn_ma] Similar to PVi_ma except this is keyword for BINTABLE vector.

3.97 *i*V*n_ma*

Key: [*i*]vn[*n*]_[*m*][*a*]

Info: Value for intermediate WCS axis i

Type:

HDU: extension

Description: [iVn_ma] This is equivalent to iPVn_ma.

3.98 TPV*n_m*

Key: tpv[*n*]_[*m*]

Info: Value for intermediate WCS axis i

Type: float

HDU: any

Description: [TPVn_ma] Similar to PVi_ma except this is keyword for pixel list or table.

3.99 TV*n_ma*

Key: tv[*n*]_[*m*][*a*]

Info: Value for intermediate WCS axis i

Type: float

HDU: any

Description: [TVn_ma] This is equivalent to TPVn_ma.

3.100 *i*V*n*_X*a*

Key: [*i*]vx[*n*]_X[*a*]

Info: Coordinate parameter array

Type: float

HDU: extension

Description: [iVn_Xa] Coordinate parameter array for BINTABLE vector.

3.101 PS*i_ma*

Key: ps[*i*]_[*m*][*a*]

Info: Parameters for intermediate WCS axis i

Type: string

HDU: primary

Description: [PSi_ma] [character]. Character-valued parameters for intermediate world coordinate axis i, where m is the parameter number. Leading zeros must not be used, and m may have only values in the range 0 through 99, and that are defined for the particular non-linear algorithm.

3.102 *i*PS*n_ma*

Key: [*i*]ps[*n*]_[*m*][*a*]

Info: Parameters for intermediate WCS axis i

Type: string

HDU: extension

Description: [iPSn_ma] Similar to PSi_ma except this is keyword for BINTABLE vector.

3.103 *i*S*n_ma*

Key: [*i*]s[*n*]_[*m*]

Info: Parameters for intermediate WCS axis i

Type: string

HDU: extension

Description: [iSn_ma] This is equivalent to PSi_ma

3.104 TPS*n_ma*

Key: tps[*n*]_[*m*][*a*]

Info: Parameters for intermediate WCS axis i

Type: string

HDU: any

Description: [TPSn_ma] Similar to PSi_ma except this is keyword for pixel list or table.

3.105 TS*n_ma*

Key: ts[*n*]_[*m*][*a*]

Info: Parameters for intermediate WCS axis i

Type: string

HDU: any

Description: [TSn_ma] This is equivalent to TPSn_ma

3.106 CRDER*i*

Key: crder[*i*]

Info: Random error in coordinate i

Type: float

HDU: primary

Description: [CRDERi] [floating point; default: 0.0]. Random error in coordinate i, which must be non-negative.

3.107 *i*CRD*na*

Key: [*i*]crd[*n*][*a*]

Info: Random error in coordinate i

Type: float

HDU: extension

Description: [iCRDna] Similar to CRDERi except this is keyword for BINTABLE vector.

3.108 TCRD*na*

Key: tcrd[*n*][*a*]

Info: Random error in coordinate i

Type: float

HDU: any

Description: [TCRDna] Similar to CRDERi except this is keyword for pixel list or table.

3.109 CSYER*i*

Key: csyer[*i*]

Info: Systematic error in coordinate i

Type: float

HDU: primary

Description: [CSYERi] [floating point; default: 0.0]. Systematic error in coordinate i, which must be non-negative.

3.110 *i*CSY*na*

Key: [*i*]csy[*n*][*a*]

Info: Systematic error in coordinate i

Type: float

HDU: extension

Description: [iCSYna] Similar to CSYERi except this is keyword for BINTABLE vector.

3.111 TCSY*na*

Key: tcsy[*n*][*a*]

Info: Systematic error in coordinate i

Type: float

HDU: any

Description: [TCSYna] Similar to CSYERi except this is keyword for pixel list or table.

3.112 WCST*na*

Key: wcst[*n*][*a*]

Info: WCS cross-reference target for BINTABLE vector

Type: string

HDU: extension

Description: [WCSTna] WCS Cross-reference target for BINTABLE vector

3.113 WCSX*na*

Key: wcsx[*n*][*a*]

Info: WCS cross-reference for BINTABLE vector

Type: string

HDU: extension

Description: [WCSXna] WCS Cross-reference for BINTABLE vector

3.114 WCSNAME*a*

Key: wcsname[*a*]

Info: Name of the world world coordinate system

Type: string

HDU: primary

Description: [WCSNAMEa] [character; default for a: ' ' (i.e., blank, for the primary WCS, else a character A through Z that specifies the coordinate version]. Name of the world coordinate system represented by the WCS keywords with the suffix a. Its primary function is to provide a means by which to specify a particular WCS if multiple versions are defined in the HDU.

3.115 WCSN*na*

Key: wcsn[*n*][*a*]

Info: Name of the world world coordinate system

Type: string

HDU: extension

Description: [WCSNna] Similar to WCSNAMEa except this is keyword for BINTABLE vector.

3.116 WCS*na*

Key: wcs[*n*][*a*]

Info: Name of the world world coordinate system

Type: string

HDU: any

Description: [WCSna] Similar to WCSNAMEa except this is keyword for pixel list or table.

3.117 TWCS*na*

Key: twcs[*n*][*a*]

Info: Name of the world coordinate system

Type: string

HDU: any

Description: [TWCSna] This is equivalent to WCSna.

3.118 RADESYS*a*

Key: radesys[*a*]

Info: Reference frame of equatorial or ecliptic coordinates

Type: string

HDU: any

Description: [RADESYSa] [character; default: FK4, FK5, or ICRS: see below]. Name of the reference frame of equatorial or ecliptic coordinates, whose value must be one of those specified in Table 24 of 'FITS Standard' document. The default value is FK4 if the value of EQUINOXa < 1984.0, FK5 if EQUINOXa >= 1984.0, or ICRS if EQUINOXa is not given. Note that the IAU recommends (IAU 1997) that ICRS be used as the reference celestial coordinate system, so this reference system should be used for all data products created by GMT (i.e., RADESYS = 'ICRS'). If RADESYS is 'ICRS' then the EQUINOX keyword must not be used (and note that the EPOCH keyword is already DEPRECATED).

3.119 RADECSYS

Key: radecsys

Info: [Deprecated] Reference frame of equatorial or ecliptic coordinates

Type: string

HDU: any

Description: The exact same definition as RADESYSa

3.120 RADE*na*

Key: rade[*n*][*a*]

Info: Reference frame of equatorial or ecliptic coordinates

Type: string

HDU: extension

Description: [RADEna] Similar to RADESYSa except this is keyword for BINTABLE vector, pixel list, or table, alike.

3.121 EQUINOX*a*

Key: equinox[*a*]

Info: Equinox of celestial coordinate system

Type: float

HDU: any

Description: [EQUINOXa] The value field shall contain a floating point number giving the equinox in years for the celestial coordinate system in which positions are expressed. The interpretation of epoch depends upon the value of RADESYSa if present: Besselian if the value is FK4 or FK4-NO-E, Julian if the value is FK5; not applicable if the value is ICRS or GAPPT.

3.122 EQUI*na*

Key: equi[*n*][*a*]

Info: Equinox of celestial coordinate system

Type: float

HDU: extension

Description: [EQUIna] Similar to EQUINOXa except this is keyword for BINTABLE vector, pixel list, or table, alike.

3.123 MJD-OBS

Key: mjd_obs

Info: Modified Julian Date of observation

Type: float

HDU: primary

Description: [floating point; default: DATE-OBS if given, other- wise no default]. Modified Julian Date (JD – 2,400,000.5) of the observation, whose value corresponds (by default) to the start of the observation, unless another interpretation is explained in the comment field. No specific time system (e.g. UTC, TAI, etc.) is defined for this or any of the other time-related keywords. It is recommended that the TIMESYS keyword, as defined in Appendix B be used to specify the time system.

3.124 MJDOB*n*

Key: mjdob[*n*]

Info: Modified Julian Date of observation

Type: float

HDU: extension

Description: [MJDOBn] Similar to MJD_OBS except this is keyword for BINTABLE vector, pixel list, or table, alike.

3.125 TIMESYS

Key: timesys

Info: Time system used

Type: string

HDU: any

Description: Time system used. Corresponds to the IVOA 'CoordSys.TimeFrame.Name' Spectral Data Model. Note that the IAU recommends (IAU 1991) that TT be used as the reference timescale for apparent geocentric ephemerides, so this timescale should be used for all data products created by GMT (i.e., TIMESYS = 'TT'), unless another timescale is specifically required scientifically. In particular, UTC should NOT be used as a timescale (the one exception is the DATE keyword, which identifies the date/time when the file was created; this is explicitly required to be recorded in UTC).

3.126 TIMEUNIT

Key: timeunit

Info: Units of time reference

Type: string

HDU: any

Description: The units for reference point in time.

3.127 DATEREF

Key: dateref

Info: ISO-8601 time reference point

Type: datetime

HDU: any

Description: The reference point in time, in ISO-8601, to which all times in the HDU are relative. Format: [+/-C]CCYY-MM-DD[Thh:mm:ss[.s...]] The 'datetime' string uses a 4-digit year format or signed 5-digit year format, where [+/-C]CCYY is the year.

3.128 LONPOLE*a*

Key: lonpole[a]

Info: Longitude relative to celestial north pole

Type: float

HDU: any

Description: [LONPOLEa] [floating point; default: $\phi 0$ if $\delta 0$ >= $\theta 0$, $\phi 0$ + 180 deg otherwise]. Longitude in the native coordinate system of the celestial system's north pole. Normally, $\phi 0$ is zero unless a non-zero value has been set for PVi 1a, which is associated with the longitude axis. This default applies for all values of $\theta 0$, including $\theta 0$ = 90 deg, although the use of non-zero values of $\theta 0$ are discouraged in that case.

3.129 LONP*na*

Key: lonp[n][a]

Info: Longitude relative to celestial north pole

Type: float

HDU: extension

Description: [LONPna] Similar to LONPOLEa except this is keyword for BINTABLE vector, pixel list, or table, alike.

3.130 LATPOLE*a*

Key: latpole[a]

Info: Latitude relative to celestial north pole

Type: float

HDU: any

Description: [LATPOLEa] [floating point; default: 90 deg, or no default if (θ0, δ0, ϕp-ϕ0) = (0, 0, $\pm$90 deg)]. Latitude in the native coordinate system of the celestial system's north pole, or equivalently, the latitude in the celestial coordinate system of the native system's north pole. May be ignored or omitted in cases where LONPOLEa completely specifies the rotation to the target celestial system.

3.131 LATP*na*

Key: latp[*n*][*a*]

Info: Latitude relative to celestial north pole

Type: float

HDU: extension

Description: [LATPna] Similar to LATPOLEa except this is keyword for BINTABLE vector, pixel list, or table, alike.

3.132 CNAME*ia*

Key: cname[*i*][*a*]

Info: Time or spectral coordinate name/description

Type: string

HDU: any

Description: [CNAMEia] [character; default: ' ' (i.e. a linear, undefined axis)]. Time or spectral coordinate description which must not exceed 68 characters in length.

3.133 *i*CNA*na*

Key: [0-9]cna[*i*][*n*]

Info: Time or spectral coordinate name/description

Type: string

HDU: extension

Description: [iCNAna] Similar to CNAMEia except this is keyword for BINTABLE vector.

3.134 TCNA*na*

Key: tcna[*n*][*a*]

Info: Time or spectral coordinate name/description

Type: string

HDU: any

Description: [TCNAna] Similar to CNAMEia except this is keyword for pixel list or table.

3.135 RESTFRQ*a*

Key: restfrq[*a*]

Info: Rest frequency of spectral feature of interest

Type: float

HDU: any

Description: [floating point; default: none]. Rest frequency of the of the spectral feature of interest. The physical unit must be Hz.

3.136 RESTFREQ

Key: restfreq

Info: [Deprecated] Rest frequency of spectral feature of interest

Type: float

HDU: any

Description: This keyword is identical to RESTFRQa.

3.137 RFRQ*na*

Key: rfrq[*n*][*a*]

Info: Rest frequency of spectral feature of interest

Type: float

HDU: extension

Description: [RFRQna] Similar to RESTFRQa except this is keyword for BINTABLE vector and pixel list alike.

3.138 RESTWAV*a*

Key: restwav[*a*]

Info: Vacuum rest wavelength of the spectral feature of interest

Type: float

HDU: any

Description: [RESTWAVa] [floating point; default: none]. Vacuum rest wavelength of the spectral feature of interest. The physical unit must be m.

3.139 RWAV*na*

Key: rwav[*n*][*a*]

Info: Vacuum rest wavelength of the spectral feature of interest

Type: float

HDU: extension

Description: [RWAVna] Similar to RESTWAVn except this is keyword for BINTABLE vector and pixel list alike.

3.140 DATE-AVG

Key: date_avg

Info: Calendar date of the mid-point of observation

Type: string

HDU: any

Description: [character; default: none]. Calendar date of the mid-point of the observation, expressed in the same way as the DATE-OBS keyword.

3.141 DAVG*n*

Key: davg[*n*]

Info: Calendar date of the mid-point of observation

Type: string

HDU: extension

Description: [DAVn] Similar to DATE-AVG except this is keyword for BINTABLE vector and pixel list alike.

3.142 MJD-AVG

Key: mjd_avg

Info: MJD of the mid-point of the observation

Type: float

HDU: any

Description: [floating point; default: none]. Modified Julian Date (JD – 2,400,000.5) of the mid-point of the observation.

3.143 MJDA*n*

Key: mjda[*n*]

Info: MJD of the mid-point of the observation

Type: float

HDU: extension

Description: [MJDAn] Similar to MJD-AVG except this is keyword for BINTABLE vector and pixel list alike.

3.144 SPECSYS*a*

Key: specsys[*a*]

Info: Reference frame of spectral axis coordinate

Type: string

HDU: any

Description: [SPECSYSa] [character; default: none]. The reference frame in use for the spectral axis coordinate(s). Valid values are given F2W in Table 27 of the 'FITS Standard' document.

3.145 SPEC*na*

Key: spec[*n*][*a*]

Info: Reference frame of spectral axis coordinate

Type: string

HDU: extension

Description: [SPECna] Similar to SPECna except this is keyword for BINTABLE vector and pixel list alike.

3.146 SSYSOBS*a*

Key: ssysobs[*a*]

Info: Constant spectral reference frame over the range of non-spectral WCS

Type:

HDU: any

Description: [SSYSOBSa] [character; default: TOPOCENT]. The spectral reference frame that is constant over the range of the non-spectral world coordinates. Valid values are given in Table 27 of the 'FITS Standard' document.

3.147 SOBS*na*

Key: sobs[*n*][*a*]

Info: Constant spectral reference frame over the range of non-spectral WCS

Type: string

HDU: extension

Description: [SOBSna] Similar to SSYSOBSa except this is keyword for BINTABLE vector and pixel list alike.

3.148 OBSGEO-X

Key: obsgeo_x

Info: X-coordinate of geocentric reference frame relative to standard

Type: float

HDU: any

Description: [floating point; default: none]. X-coordinate (in meters) of a Cartesian triplet that specifies the location, with respect to a standard, geocentric terrestrial reference frame, where the observation took place. The coordinate must be valid at the epoch MJD-AVG or DATE-AVG.

3.149 OBSGX*n*

Key: obsgx[*n*]

Info: X-coordinate of geocentric reference frame relative to standard

Type: float

HDU: extension

Description: [OBSGXn] Similar to OBSGEO-X except this is keyword for BINTABLE vector and pixel list alike.

3.150 OBSGEO-Y

Key: obsgeo_y

Info: Y-coordinate of geocentric reference frame relative to standard

Type: float

HDU: any

Description: [floating point; default: none]. Y-coordinate (in meters) of a Cartesian triplet that specifies the location, with respect to a standard, geocentric terrestrial reference frame, where the observation took place. The coordinate must be valid at the epoch MJD-AVG or DATE-AVG.

3.151 OBSGY*n*

Key: obsgy[*n*]

Info: Y-coordinate of geocentric reference frame relative to standard

Type: float

HDU: extension

Description: [OBSGYn] Similar to OBSGEO-Y except this is keyword for BINTABLE vector and pixel list alike.

3.152 OBSGEO-Z

Key: obsgeo_z

Info: Z-coordinate of geocentric reference frame relative to standard

Type: float

HDU: any

Description: [floating point; default: none]. Z-coordinate (in meters) of a Cartesian triplet that specifies the location, with respect to a standard, geocentric terrestrial reference frame, where the observation took place. The coordinate must be valid at the epoch MJD-AVG or DATE-AVG.

3.153 OBSGZ*n*

Key: obsgz[*n*]

Info: Z-coordinate of geocentric reference frame relative to standard

Type: float

HDU: extension

Description: [OBSGZn] Similar to OBSGEO-Z except this is keyword for BINTABLE vector and pixel list alike.

3.154 SSYSSRC*a*

Key: ssyssrc[*a*]

Info: Reference frame of systemic velocity of observed source

Type: float

HDU: any

Description: [SSYSSRCa] [character; default: none]. Reference frame for the value expressed in the ZSOURCEa keyword to document the systemic velocity of the observed source. Value must be one of those given in Table 27 in the 'FITS Standard' document except for SOURCE.

3.155 SSRC*na*

Key: ssrc[*n*][*a*]

Info: Reference frame of systemic velocity of observed source

Type: float

HDU: extension

Description: [SSRCna] Similar to SSYSSRCa except this is keyword for BINTABLE vector and pixel list alike.

3.156 VELOSYS*a*

Key: velosys[*a*]

Info: Relative radial velocity between observer and selected standard of rest

Type: float

HDU: any

Description: [VELOSYSa] [floating point; default: none]. Relative radial velocity between the observer and the selected standard of rest in the direction of the celestial reference coordinate. Units must be m/s. The CUNITia keyword is not used for this purpose since the WCS version a might not be expressed in velocity units.

3.157 VSYS*na*

Key: vsys[*n*][*a*]

Info: Relative radial velocity between observer and selected standard of rest

Type: float

HDU: extension

Description: [VSYSna] Similar to VELOSYSa except this is keyword for BINTABLE vector and pixel list alike.

3.158 ZSOURCE*a*

Key: zsource[*a*]

Info: Redshift of source

Type: float

HDU: any

Description: [ZSOURCEa] [floating point; default: none]. Radial velocity with respect to an alternative frame of rest, expressed as a unitless redshift (i.e., velocity as a fraction of the speed of light in vacuum). Used in conjunction with SSYSSRCa to document the systemic velocity of the observed source.

3.159 ZSOU*na*

Key: zsou[*n*][*a*]

Info: Redshift of source

Type: float

HDU: extension

Description: [ZSOUna] Similar to ZSOURCEa except this is keyword for BINTABLE vector and pixel list alike.

3.160 VELANGL*na*

Key: velangl[*n*][*a*]

Info: Space velocity vector angle of source

Type: float

HDU: any

Description: [VELANGLna] [floating point; default:+90.]. In the case of relativistic velocities (e.g., a beamed astrophysical jet) the transverse velocity component is important. This keyword may be used to express the orientation of the space velocity vector with respect to the plane of the sky. See Appendix A of reference Greisen et al. (2006) for further details.

3.161 VANG*na*

Key: vang[*n*][*a*]

Info: Space velocity vector angle of source

Type: float

HDU: extension

Description: [VANGna] Similar to VELANGLa except this is keyword for BINTABLE vector and pixel list alike.

CHAPTER

FOUR

ADDITIONAL BASELINE FITS KEYWORDS

Description: Supplemental keywords for FITS headers. These keywords are not found the FITS Standard. The keywords and descriptions in some cases are derived, sometimes inherited verbatim, from the 'Introduction to the HST Data Handbooks', Data Handbooks from WFC3, STIS, etc., 'ESO Data Interface Control Document (GEN-SPE-ESO-19400-0794)', and Chandra's 'ASC FITS Designers' Guide ASC-FITS-2.1.0'

4.1 PROPOSID

Key: proposid

Info: Proposal ID

Type: string

HDU: any

Description: Proposal ID. This corresponds to IVOA 'proposal_id' and 'Proposal.Identifier' Spectral Data Model.

4.2 PROPTYPE

Key: proptype

Info: Proposal type

Type: string

HDU: any

Description: Proposal type. Type of proposal, e.g. large (multi-cycle) survey, general observer, theory, archival, etc.

4.3 PI_COI

Key: pi_coi

Info: Names of PI and CO-Is (Initials and Surname)

Type: string

HDU: any

Description: (PI-COI) The PI or Co-I's initials followed by his/her surname

4.4 PI_LAST

Key: pi_last

Info: Last name of the principle investigator

Type: string

HDU: any

Description: Last name of the principle investigator

4.5 PI_FIRST

Key: pi_first

Info: First name of the principle investigator

Type: string

HDU: any

Description: First name of the principle investigator

4.6 PI_MIDDL

Key: pi_middl

Info: Middle name of the principle investigator

Type: string

HDU: any

Description: Middle name of the principle investigator

4.7 SUN_ALT

Key: sun_alt

Info: Altitude of the sun

Type: float

HDU: any

Description: Altitude of the sun above horizon

4.8 SUNANGLE

Key: sunangle

Info: Angle between sun and z-axis

Type: float

HDU: any

Description: Angle between sun and z-axis. The value field shall contain a floating point number giving the angle between the direction of the observation (e.g., the optical axis of the telescope or the position of the target) and the sun, measured in degrees.

4.9 MOONANGL

Key: moonangl

Info: Angle between moon and z-axis

Type: float

HDU: any

Description: Angle between moon and z-axis. The value field shall contain a floating point number giving the angle between the direction of the observation (e.g., the optical axis of the telescope or the position of the target) and the moon, measured in degrees.

4.10 REFFRAME

Key: refframe

Info: Guide star catalog version

Type: string

HDU: any

Description: Guide star catalog version

4.11 TIME-OBS

Key: time_obs

Info: [Deprecated in favor of DATE-OBS] UT time of start of observation (hh:mm:ss)

Type: string

HDU: any

Description: [Deprecated in favor of DATE-OBS] UT time of start of observation (hh:mm:ss). The value field shall contain a character string that gives the time at which the observation started. This keyword is used in conjunction with the standard DATE-OBS keyword to give the starting time of the observation; the DATE-OBS keyword gives the starting calendar date, with format 'yyyy-mm-dd', and TIME-OBS gives the time within that day using the format 'hh:mm:ss.sss...'. This keyword should not be used if the time is included directly as part of the DATE-OBS keyword value with the format 'yyyy-mm-ddThh:mm:ss.sss'.

4.12 EXPSTART

Key: expstart

Info: [Deprecated in favor of TSTART] Exposure start time (Modified Julian Date)

Type: float

HDU: any

Description: [Deprecated in favor of TSTART] Exposure start time (Modified Julian Date)

4.13 EXPEND

Key: expend

Info: [Deprecated in favor of TSTOP] Exposure end time (Modified Julian Date)

Type: float

HDU: any

Description: Exposure end time (Modified Julian Date)

4.14 EXPTIME

Key: exptime

Info: [Deprecated in favor of XPOSURE] On-detector, open-shutter, integration time (seconds)

Type: float

HDU: any

Description: [Deprecated in favor of XPOSURE] Provides the integration time in seconds. The value field shall contain a floating point number giving the exposure time of the observation in units of seconds. The exact definition of 'exposure time' is mission dependent and may, for example, include corrections for shutter open and close duration, detector dead time, vignetting, or other effects. Although not a standard use, EXPTIME is commonly used to calculate the flux of a source via: Flux = ADU / EXPTIME. It is advisable to respect this usage. Under this definition, when multiple images are combined into one, EXPTIME is sometimes used with NCOMBINE to reflect the type of combining operation: if the images are summed then EXPTIME is the total open shutter integration, summed over all the sub-exposures, but with NCOMBINE=1. If N subexposures are averaged together into 1, then EXPTIME is the average exposure time, and with NCOMBINE = N. The purpose of defining NCOMBINE in this way is to facilitate the calculation of image statistics.

4.15 EXPFLAG

Key: expflag

Info: Exposure interrupt indicator

Type: string

HDU: any

Description: Exposure interrupt indicator

4.16 QUALCOM*n*

Key: qualcom[*n*]

Info: Data quality comment n

Type: string

HDU: any

Description: Data quality comment n

4.17 QUALITY

Key: quality

Info: Data quality summary

Type: string

HDU: any

Description: Data quality summary

4.18 INSTITUT

Key: institut

Info: Institutions of the PI/Co-I

Type: string

HDU:

Description: Institutions of the PI/Co-I

4.19 TARGNAME

Key: targname

Info: Target name

Type: string

HDU: any

Description: The value field shall contain a character string giving a name for the observed object that conforms to the IAU astronomical object naming conventions. The value of this keyword is more strictly constrained than for the standard OBJECT keyword which in practice has often been used to record other ancillary information about the observation (e.g. filter, exposure time, weather conditions, target category, etc.). This keyword never specifies target category. Corresponds to IVOA 'target_name'.

4.20 TARGDESC

Key: targdesc

Info: Target description

Type: string

HDU: any

Description: Target description is used to describe a target more generally than its category.

4.21 VROT

Key: vrot

Info: Projected rotational velocity of target (v * sin i)

Type: float

HDU: any

Description: Projected rotation velocity of target (v * sin i).

4.22 EBV

Key: ebv

Info: Color excess E(B-V)

Type: float

HDU: any

Description: Color excess E(B-V).

4.23 RA_TARG

Key: ra_targ

Info: Right ascension of the target in mean places of equinox

Type: float

HDU: any

Description: Right ascension of the target in mean places of equinox. The value field gives the right ascension of the observation. It may be expressed either as a floating point number in units of decimal degrees, or as a character string in 'hr:mm:ss.sss' format where the decimal point and number of fractional digits are optional. The coordinate reference frame is given by the RADECSYS keyword, and the coordinate epoch is given by the EQUINOX keyword. Example: 12.25944 or '12:15:34.00'. Also corresponds to the IVOA 'Target.Pos' Spectral Data Model.

4.24 DEC_TARG

Key: dec_targ

Info: Declination of the target in mean places of equinox

Type: float

HDU: any

Description: Declination of the target in mean places of equinox. The value field gives the declination of the observation. It may be expressed either as a floating point number in units of decimal degrees, or as a character string in 'dd:mm:ss.sss' format where the decimal point and number of fractional digits are optional. The coordinate reference frame is given by the RADECSYS keyword, and the coordinate epoch is given by the EQUINOX keyword. Example: -47.25944 or '-47:15:34.00'. Also corresponds to the IVOA 'Target.Pos' Spectral Data Model.

4.25 ECL_LONG

Key: ecl_long

Info: Ecliptic longitude of target (deg)

Type: float

HDU: any

Description: Ecliptic longitude of target (deg)

4.26 ECL_LAT

Key: ecl_lat

Info: Ecliptic latitude of target (deg)

Type: float

HDU: any

Description: Ecliptic latitude of target (deg)

4.27 GAL_LONG

Key: gal_long

Info: Galactic longitude of target (deg)

Type: float

HDU: any

Description: Galactic longitude of target (deg)

4.28 GAL_LAT

Key: gal_lat

Info: Galactic latitude of target (deg)

Type: float

HDU: any

Description: Galactic latitude of target (deg)

4.29 TEQUINOX

Key: tequinox

Info: Equinox of the target

Type: float

HDU: any

Description: Equinox of the target

4.30 RV_HELIO

Key: rv_helio

Info: Target heliocentric radial velocity

Type: float

HDU: any

Description: Target heliocentric radial velocity

4.31 PM_FLAG

Key: pm_flag

Info: Does this target have proper motion?

Type: boolean

HDU: any

Description: Does this target have proper motion

4.32 PM_RA

Key: pm_ra

Info: Target proper motion in RA

Type: float

HDU: any

Description: Target proper motion in RA

4.33 PM_DEC

Key: pm_dec

Info: Target proper motion in DEC

Type: float

HDU: any

Description: Target proper motion in DEC

4.34 PM_EQNX

Key: pm_eqnx

Info: Equinox of target proper motion

Type: string

HDU: any

Description: Equinox of target proper motion, from proposal

4.35 PARALLAX

Key: parallax

Info: Target parallax

Type: float

HDU: any

Description: Target parallax

4.36 GS*n*_ID

Key: gs[*n*]_id

Info: ID of the guide star

Type: float

HDU: any

Description: ID of the guide star

4.37 GS*n*_RA

Key: gs[*n*]_ra

Info: Right ascension of the guide stars in mean places of equinox

Type: float

HDU: any

Description: Right ascension of the guide stars in mean places of equinox

4.38 GS*n*_DEC

Key: gs[*n*]_dec

Info: Declination of the guide stars in mean places of equinox

Type: float

HDU: any

Description: Declination of the guide stars in mean places of equinox

4.39 GS*n*_MAG

Key: gs[*n*]_mag

Info: Guide star magnitude

Type: float

HDU: any

Description: Guide star magnitude

4.40 GS*n*_FILT

Key: gs[*n*]_filt

Info: Passband of guide star magnitude

Type: string

HDU: any

Description: Passband of guide star magnitude

4.41 GS*n*_EQNX

Key: gs[*n*]_eqnx

Info: Equinox of the guidestars

Type: float

HDU: any

Description: Equinox of the guidestars

4.42 GS1_ID

Key: gs1_id

Info: ID of the guide star 1

Type: float

HDU: any

Description: ID of the guide star 1

4.43 GS1_RA

Key: gs1_ra

Info: Right ascension of the guide star 1 in mean places of equinox

Type: float

HDU: any

Description: Right ascension of the guide star 1 in mean places of equinox

4.44 GS1_DEC

Key: gs1_dec

Info: Declination of the guide star 1 in mean places of equinox

Type: float

HDU: any

Description: Declination of the guide star 1 in mean places of equinox

4.45 GS1_MAG

Key: gs1_mag

Info: Guide star 1 magnitude

Type: float

HDU: any

Description: Guide star 1 magnitude

4.46 GS1_FILT

Key: gs1_filt

Info: Passband of guide star 1 magnitude

Type: string

HDU: any

Description: Passband of guide star 1 magnitude

4.47 GS1_EQNX

Key: gs1_eqnx

Info: Equinox of the guidestar 1

Type: float

HDU: any

Description: Equinox of the guidestar 1

4.48 GS2_ID

Key: gs2_id

Info: ID of the guide star 2

Type: float

HDU: any

Description: ID of the guide star 2

4.49 GS2_RA

Key: gs2_ra

Info: Right ascension of the guide star 2 in mean places of equinox

Type: float

HDU: any

Description: Right ascension of the guide star 2 in mean places of equinox

4.50 GS2_DEC

Key: gs2_dec

Info: Declination of the guide star 2 in mean places of equinox

Type: float

HDU: any

Description: Declination of the guide star 2 in mean places of equinox

4.51 GS2_MAG

Key: gs2_mag

Info: Guide star 2 magnitude

Type: float

HDU: any

Description: Guide star 2 magnitude

4.52 GS2_FILT

Key: gs2_filt

Info: Passband of guide star 2 magnitude

Type: string

HDU: any

Description: Passband of guide star 2 magnitude

4.53 GS2_EQNX

Key: gs2_eqnx

Info: Equinox of the guidestar 2

Type: float

HDU: any

Description: Equinox of the guidestar 2

4.54 GS3_ID

Key: gs3_id

Info: ID of the guide star 3

Type: float

HDU: any

Description: ID of the guide star 3

4.55 GS3_RA

Key: gs3_ra

Info: Right ascension of the guide star 3 in mean places of equinox

Type: float

HDU: any

Description: Right ascension of the guide star 3 in mean places of equinox

4.56 GS3_DEC

Key: gs3_dec

Info: Declination of the guide star 3 in mean places of equinox

Type: float

HDU: any

Description: Declination of the guide star 3 in mean places of equinox

4.57 GS3_MAG

Key: gs3_mag

Info: Guide star 3 magnitude

Type: float

HDU: any

Description: Guide star 3 magnitude

4.58 GS3_FILT

Key: gs3_filt

Info: Passband of guide star 3 magnitude

Type: string

HDU: any

Description: Passband of guide star 3 magnitude

4.59 GS3_EQNX

Key: gs3_eqnx

Info: Equinox of the guidestar 3

Type: float

HDU: any

Description: Equinox of the guidestar 3

4.60 GS4_ID

Key: gs4_id

Info: ID of the guide star 4

Type: float

HDU: any

Description: ID of the guide star 4

4.61 GS4_RA

Key: gs4_ra

Info: Right ascension of the guide star 4 in mean places of equinox

Type: float

HDU: any

Description: Right ascension of the guide star 4 in mean places of equinox

4.62 GS4_DEC

Key: gs4_dec

Info: Declination of the guide star 4 in mean places of equinox

Type: float

HDU: any

Description: Declination of the guide star 4 in mean places of equinox

4.63 GS4_MAG

Key: gs4_mag

Info: Guide star 4 magnitude

Type: float

HDU: any

Description: Guide star 4 magnitude

4.64 GS4_FILT

Key: gs4_filt

Info: Passband of guide star 4 magnitude

Type: string

HDU: any

Description: Passband of guide star 4 magnitude

4.65 GS4_EQNX

Key: gs4_eqnx

Info: Equinox of the guidestar 4

Type: float

HDU: any

Description: Equinox of the guidestar 4

4.66 PA_V3

Key: pa_v3

Info: Position angle of the V3 axis.

Type: float

HDU: any

Description: Position angle of the V3 axis. The V3-axis vector points toward the origin of the instrument aperture (deg), from the center of the focal plane; it is analogous to HST PA_V3.

4.67 RA_OFF

Key: ra_off

Info: Telescope offset in RA from target position for observation

Type: float

HDU: any

Description: Telescope offset in RA from target position for observation

4.68 DEC_OFF

Key: dec_off

Info: Telescope offset in DEC from target position for observation

Type: float

HDU: any

Description: Telescope offset in DEC from target position for observation

4.69 EQNX_OFF

Key: eqnx_off

Info: Equinox of the offset, in case different from target equinox

Type: float

HDU: any

Description: Equinox of the offset, in case different from target equinox

4.70 POSTARG1

Key: postarg1

Info: Telescope Offset in axis 1 direction (usually x)

Type: float

HDU: any

Description: Telescope Offset in axis 1 direction (usually x)

4.71 POSTARG2

Key: postarg2

Info: Telescope Offset in axis 2 direction (usually y)

Type: float

HDU: any

Description: Telescope Offset in axis 2 direction (usually y)

4.72 XOFFSET

Key: xoffset

Info: Telescope Offset in X from target position for observation

Type: float

HDU: any

Description: Telescope Offset in X from target position for observation

4.73 YOFFSET

Key: yoffset

Info: Telescope Offset in Y from target position for observation

Type: float

HDU: any

Description: Telescope Offset in Y from target position for observation

4.74 TOTEXPT

Key: totexpt

Info: [Deprecated in favor of TELAPSE] Total exposure time

Type: float

HDU: any

Description: [Deprecated in favor of TELAPSE] Total exposure time

4.75 SCI_CAT

Key: sci_cat

Info: Science category (e.g. unresolved stellar pop, galaxy structure.

Type: string

HDU: any

Description: Science category (e.g. unresolved stellar pop, galaxy structure.

4.76 SCI_KWD

Key: sci_kwd

Info: Scientific keywords (e.g. Black Holes, Galaxy Bulges, Galaxy Formation and Evolution, etc.

Type: string

HDU: any

Description: Scientific keywords (e.g. Black Holes, Galaxy Bulges, Galaxy Formation and Evolution, etc.

4.77 UTC

Key: utc

Info: Time in seconds elapsed since midnight of start of exposure

Type: float

HDU: any

Description: Gives the time in seconds elapsed since midnight of the start of the exposure as known to TCS. The time on TCS is synchronized with the observatory time system via a dedicated time module. In practice, MJD-OBS, UTC, and LST, provide for a redundant consistency check mechanism in case of malfunction.

4.78 LST

Key: lst

Info: Local Sidereal Time, in seconds elapsed since midnight of the start of the exposure as known to the TCS.

Type: float

HDU: any

Description: Local Sidereal Time, in seconds elapsed since midnight of the start of the exposure as known to the TCS.

4.79 IRAF-TLM

Key: iraf_tlm

Info: (IRAF-TLM) Time of last modification [To be Deleted?]

Type: string

HDU: any

Description: (IRAF-TLM) Time of last modification [To be Deleted?]

4.80 FILENAME

Key: filename

Info: Name of the originating data file

Type: string

HDU: any

Description: The value field shall contain a character string giving the host file name used to record the original data.

4.81 FILETYPE

Key: filetype

Info: Type of data found in data file (SCI, CALIB, RAW, etc.)

Type: string

HDU: any

Description: Type of data found in data file. The value field shall contain a character string giving the file type suffix of the host file name. The full file name typically consists of the root name (see ROOTNAME) followed by a file type suffix (e.g. SCI, CALIB, RAW, etc.). [Note: Evaluate whether to replace this keyword with HDUCLASS.]

4.82 ROOTNAME

Key: rootname

Info: Rootname of the observation set

Type: string

HDU: any

Description: Rootname of the observation set. The value field shall contain a character string giving the root of the host file name. The full file name typically consists of the root name followed by a file type suffix (see FILETYPE), separated by the period ('.') character.

4.83 IMAGETYP

Key: imagetyp

Info: Type of exposure identifier (e.g. EXT)

Type: string

HDU: any

Description: Type of exposure identifier (e.g. EXT)

4.84 PRIMESI

Key: primesi

Info: Instrument designated as prime [DELETE?]

Type: string

HDU: any

Description: Instrument designated as prime [DELETE?]

4.85 ORIGFILE

Key: origfile

Info: Original file name

Type: string

HDU: any

Description: Records the original file name, as assigned at the instrument workstation. This is an alternative file name.

4.86 ARCFILE

Key: arcfile

Info: Archive file name

Type: string

HDU: any

Description: Provides the name under which the file is stored in the archive

4.87 CHECKSUM

Key: checksum

Info: Exposure integrity checksum

Type: string

HDU: any

Description: Provides a Cyclic Redundant Check (CRC) calculation for each HDU, using the ASCII encoded 1's complement algorithm. The value field of the CHECKSUM keyword shall contain a 16 character string, left justified starting in column 12, containing the ASCII encoded complement of the checksum of the FITS HDU (Header and Data Unit). The algorithm shall be the 32-bit 1's complement checksum and the ASCII encoding that are described in the checksum proposal. The checksum is accumulated in FITS datastream order on the same HDU, identical in all respects, except that the value of the CHECKSUM keyword shall be set to the string '0000000000000000' (ASCII 0's, hex 30) before the checksum is computed.

4.88 CHECKVER

Key: checkver

Info: Version of checksum algorithm

Type:

HDU: any

Description: The value field of the CHECKVER keyword shall contain a string, unique in the first 8 characters, which distinguishes between any future alternative checksum algorithms which may be defined. The default value for a missing keyword shall be 'COMPLEMENT' which will represent the algorithm defined in the current proposal. It is recommended that this keyword be omitted from headers which implement the default ASCII encoded 32-bit 1's complement algorithm.

4.89 DATASUM

Key: datasum

Info: Data integrity checksum

Type: string

HDU: any

Description: Gives the checksum calculated for the data sections only. The value field of the DATASUM keyword shall be a character string containing the unsigned integer value of the checksum of the data records of the HDU. For dataless HDU's, this keyword may either be omitted, or the value field shall contain the string value '0', which is preferred. A missing DATASUM keyword asserts no knowledge of the checksum of the data records.

4.90 DATE-END

Key: date_end

Info: Date of the end of observation

Type:

HDU: any

Description: The value field shall contain a character string that gives the date on which the observation ended. This keyword has the same format, and is used in conjunction with, the standard DATA-OBS keyword that gives the starting date of the observation. These 2 keywords may give either the calendar date using the 'yyyy-mm-dd' format, or may give the full date and time using the 'yyyy-mm-ddThh:mm:ss.sss' format.

4.91 RA_NOM

Key: ra_nom

Info: Nominal right ascension of the observation

Type:

HDU: any

Description: Nominal right ascension of the observation. The value field shall contain a floating point number giving the nominal Right Ascension of the pointing direction in units of decimal degrees. The coordinate reference frame is given by the RADECSYS keyword, and the coordinate epoch is given by the EQUINOX keyword. The precise definition of this keyword is instrument-specific, but typically the nominal direction corresponds to the direction to which the instrument was requested to point. The RA_PNT keyword should be used to give the actual pointed direction.

4.92 DEC_NOM

Key: dec_nom

Info: Nominal declination of the observation

Type:

HDU: any

Description: Nominal declination of the observation. The value field shall contain a floating point number giving the nominal declination of the pointing direction in units of decimal degrees. The coordinate reference frame is given by the RADECSYS keyword, and the coordinate epoch is given by the EQUINOX keyword. The precise definition of this keyword is instrument-specific, but typically the nominal direction corresponds to the direction to which the instrument was requested to point. The DEC_PNT keyword should be used to give the actual pointed direction.

4.93 INHERIT

Key: inherit

Info: Indicates whether header of primary HDU is inherited into extensions

Type: boolean

HDU: primary

Description: The presence of this keyword with a value = T in an extension header indicates that the keywords contained in the primary header (except the FITS Mandatory keywords, and any COMMENT, HISTORY or 'blank' keywords) are to be inherited, or logically included in that extension header.

4.94 PROCTIME

Key: proctime

Info: Pipeline processing time (MJD)

Type: float

HDU: any

Description: Pipeline processing time (MJD)

4.95 OBSTYPE

Key: obstype

Info: Observation type - imaging or spectroscopic

Type: string

HDU: any

Description: Observation type - imaging or spectroscopic

4.96 OBSMODE

Key: obsmode

Info: GMT Observing mode

Type: string

HDU: any

Description: GMT Observing mode. The value field shall contain a character string which gives the observing mode of the operation. Examples: 'SEEING-LIMITED', 'LTAO', 'NGS'

4.97 OPMODE

Key: opmode

Info: GMT Operating mode

Type: string

HDU: any

Description: GMT operating mode, e.g. queue, classical, target of opportunity, etc.

4.98 TOBSMODE

Key: tobsmode

Info: Telescope Observing mode

Type: string

HDU: any

Description: Telescope Observing mode. The value field shall contain a character string which gives the observing mode of the observation. This is used in cases where the instrument or detector can be configured to operate in different modes which significantly affect the resulting data. Examples: 'SLEW', 'RASTER', or 'POINTING'

4.99 SCLAMP

Key: sclamp

Info: Lamp status, NONE or name of lamp which is on

Type: string

HDU: any

Description: Lamp status, NONE or name of lamp which is on

4.100 NRPTEXP

Key: nrptexp

Info: Number of repeat exposures in set: default 1

Type: integer

HDU: any

Description: Number of repeat exposures in set: default 1

4.101 SUBARRAY

Key: subarray

Info: Data from a subarray (T) or full frame (F)

Type: boolean

HDU: any

Description: Data from a subarray (T) or full frame (F)

4.102 DETECTOR

Key: detector

Info: Detector name in use

Type: string

HDU: any

Description: Detector name in use. The value field shall contain a character string giving the name of the detector within the instrument that was used to make the observation. Example: 'CCD1'.

4.103 FILTER*n*

Key: filter[*n*]

Info: Filter name selected from filter wheel

Type: string

HDU: any

Description: Filter name selected from filter wheel. The value field shall contain a character string which gives the name of the flux filter that was used during the observation. More than 1 filter may be listed by using the FILTERn indexed keyword. The value 'none' or 'NONE' indicates that no filter was used.

4.104 FILT_ID

Key: filt_id

Info: Filter ID selected from filter wheel

Type: string

HDU: any

Description: Filter ID selected from filter wheel

4.105 Camera

Key: camera

Info: Camera name or number in use

Type: string

HDU: any

Description: Camera name or number in use

4.106 APERTURE

Key: aperture

Info: Aperture name

Type: string

HDU: any

Description: Name of field of view aperture. The value field shall contain a character string which gives the name of the instrumental aperture though which the observation was made. This keyword is typically used in instruments which have a selection of apertures which restrict the field of view of the detector.

4.107 APER_FOV

Key: aper_fov

Info: Aperture field of view

Type: string

HDU: any

Description: Aperture field of view

4.108 FOCUS

Key: focus

Info: Instrument focus setting

Type: string

HDU: any

Description: Instrument focus setting

4.109 PROPAPER

Key: propaper

Info: Aperture specified in an observing proposal

Type: string

HDU: any

Description: Aperture specified in an observing proposal

4.110 DIRIMAGE

Key: dirimage

Info: Direct image for grism or prism exposure

Type: string

HDU: any

Description: Direct image for grism or prism exposure

4.111 NITER

Key: niter

Info: Number of exposure iterations

Type: integer

HDU: any

Description: Number of exposure iterations

4.112 NSAMP

Key: nsamp

Info: Number of MULTIACCUUM ramp samples

Type: integer

HDU: any

Description: Number of MULTIACCUUM ramp samples

4.113 NREAD

Key: nread

Info: Number of MULTIACCUUM initial and final readouts

Type: integer

HDU: any

Description: Number of MULTIACCUUM initial and final readouts

4.114 READOUT

Key: readout

Info: Detector readout rate (FAST, SLOW)

Type: string

HDU: any

Description: Detector readout rate (FAST, SLOW)

4.115 SAMP_SEQ

Key: samp_seq

Info: MULTIACCUM exposure time sequence name

Type: string

HDU: any

Description: MULTIACCUM exposure time sequence name

4.116 SAMPZERO

Key: sampzero

Info: MULTIACCUM sample time of the zeroth read (sec)

Type: float

HDU: any

Description: MULTIACCUM sample time of the zeroth read (sec)

4.117 SUBTYPE

Key: subtype

Info: Size/type of subarray

Type: string

HDU: any

Description: Size/type of subarray

4.118 CRSPLIT

Key: crsplit

Info: Number of cosmic ray split exposures

Type: integer

HDU: any

Description: Number of cosmic ray split exposures

4.119 CENWAVE*n*

Key: cenwave[*n*]

Info: Proposed central wavelength of spectrum

Type: integer

HDU: any

Description: Proposed central wavelength of spectrum

4.120 DQICORR

Key: dqicorr

Info: Flag for data quality check initialization

Type: string

HDU: any

Description: Flags for initializing and performing data quality checking procedures

4.121 BLEVCORR

Key: blevcorr

Info: Flag for subtracting bias level measured from overscan (UVIS) or reference pixels (IR)

Type: string

HDU: any

Description: Flag for subtract bias level measured from overscan (UVIS) or reference pixels (IR)

4.122 ILLMCORR

Key: illmcorr

Info: Flag for subtracting background illumination

Type: string

HDU: any

Description: Flag for subtracting background illumination

4.123 CRCORR

Key: crcorr

Info: Flag to combine observations to reject/identify cosmic rays hits

Type: string

HDU: any

Description: Flag to combine observations to reject/identify cosmic rays hits

4.124 DARKCORR

Key: darkcorr

Info: Flag to subtract dark image

Type: string

HDU: any

Description: Flag to subtract dark image

4.125 FLATCORR

Key: flatcorr

Info: Flag to apply flat field to data

Type: string

HDU: any

Description: Flag to apply flat field to data

4.126 PHOTCORR

Key: photcorr

Info: Flag to populate photometric header keywords

Type: string

HDU: any

Description: Flag to populate photometric header keywords

4.127 DRIZCORR

Key: drizcorr

Info: Flag to apply drizzle processing

Type: string

HDU: any

Description: Flag to apply drizzle processing

4.128 NLINCORR

Key: nlincorr

Info: Flag to correct for detector non-linearities

Type: string

HDU: any

Description: Flag to correct for detector non-linearities

4.129 RPTCORR

Key: rptcorr

Info: Flag to combine individual repeat observations

Type: string

HDU: any

Description: Flag to combine individual repeat observations

4.130 UNITCORR

Key: unitcorr

Info: Flag to convert to count rates (see also BUNIT)

Type: string

HDU: any

Description: Flag to convert to count rates (see also BUNIT)

4.131 ZSIGCORR

Key: zsigcorr

Info: Flag to apply zero read signal correction

Type: string

HDU: any

Description: Flag to apply zero read signal correction

4.132 ZOFFCORR

Key: zoffcorr

Info: Flag to subtract MULTIACCUM zero read

Type: string

HDU: any

Description: Flag to subtract MULTIACCUM zero read

4.133 ATODCORR

Key: atodcorr

Info: Flag to correct for analog to digital conversion errors

Type: string

HDU: any

Description: Flag to correct for analog to digital conversion errors

4.134 BIASCORR

Key: biascorr

Info: Flag to subtract bias image

Type: string

HDU: any

Description: Flag to subtract bias image

4.135 EXPSCORR

Key: expscorr

Info: Flag to process individual observations after CR-reject

Type: string

HDU: any

Description: Flag to process individual observations after CR-reject

4.136 FLSHCORR

Key: flshcorr

Info: Flag to apply post flash correction

Type: string

HDU: any

Description: Flag to apply post flash correction

4.137 SHADCORR

Key: shadcorr

Info: Flag to apply shutter shading correction

Type: string

HDU: any

Description: Flag to apply shutter shading correction

4.138 WAVECORR

Key: wavecorr

Info: Flag to use wavecal to adjust wavelength zeropoint

Type: string

HDU: any

Description: Flag to use wavecal to adjust wavelength zeropoint

4.139 X1DCORR

Key: x1dcorr

Info: Flag to perform 1-D spectral extraction

Type: string

HDU: any

Description: Flag to perform 1-D spectral extraction

4.140 BACKCORR

Key: backcorr

Info: Flag to perform background subtraction (sky and interorder)

Type: string

HDU: any

Description: Flag to perform background subtraction (sky and interorder)

4.141 HELCORR

Key: helcorr

Info: Flag to convert to heliocentric wavelengths

Type: string

HDU: any

Description: Flag to convert to heliocentric wavelengths

4.142 DISPCORR

Key: dispcorr

Info: Flag to apply 2-D dispersion solutions

Type: string

HDU: any

Description: Flag to apply 2-D dispersion solutions

4.143 FLUXCORR

Key: fluxcorr

Info: Flag to convert to absolute flux units

Type: string

HDU: any

Description: Flag to convert to absolute flux units

4.144 CTECORR

Key: ctecorr

Info: Flag to correct for CCD charge transfer inefficiency

Type: string

HDU: any

Description: Flag to correct for CCD charge transfer inefficiency

4.145 X2DCORR

Key: x2dcorr

Info: Flag to rectify 2-D spectral image

Type: string

HDU: any

Description: Flag to rectify 2-D spectral image

4.146 IMSTAT

Key: imstat

Info: Flag to calculate image statistics

Type: string

HDU: any

Description: Flag to calculate image statistics

4.147 BPIXTAB

Key: bpixtab

Info: Bad pixel table

Type: string

HDU: extension

Description: Bad pixel table

4.148 CCDTAB

Key: ccdtab

Info: Detector calibration parameters

Type: string

HDU: any

Description: Detector calibration parameters

4.149 CRREJTAB

Key: crrejtab

Info: Cosmic ray rejection parameter table

Type: string

HDU: extension

Description: Cosmic ray rejection parameter table

4.150 OSCNTAB

Key: oscntab

Info: Table containing overscan (UVIS) or reference (IR) pixel locations

Type: string

HDU: any

Description: Table containing overscan (UVIS) or reference (IR) pixel locations

4.151 CRREJTAB

Key: pixrejtab

Info: Cosmic ray rejection parameters

Type: string

HDU: any

Description: Cosmic ray rejection parameters

4.152 DARKFILE

Key: darkfile

Info: Superdark image file name

Type: string

HDU: any

Description: Superdark image file name

4.153 TDARKFIL

Key: tdarkfil

Info: Temperature dependent dark file name

Type: string

HDU: any

Description: Temperature dependent dark file name

4.154 PFLTFILE

Key: pfltfile

Info: Pixel to pixel flatfield file name

Type: string

HDU: any

Description: Pixel to pixel flatfield file name

4.155 DFLTFILE

Key: dfltfile

Info: Delta flatfield file name

Type: string

HDU: any

Description: Delta flatfield file name

4.156 LFLTFILE

Key: lfltfile

Info: Low order flat file

Type: string

HDU: any

Description: Low order flat file

4.157 TFLTFILE

Key: tfltfile

Info: Temperature dependent flat file

Type: string

HDU: any

Description: Temperature dependent flat file

4.158 FFLTFILE

Key: ffltfile

Info: Fringe correction flat file

Type: string

HDU: any

Description: Fringe correction flat file

4.159 MASKFILE

Key: maskfile

Info: Mask image file name

Type: string

HDU: any

Description: Mask image file name

4.160 NOISEFIL

Key: noisefil

Info: Detector read noise file name

Type: string

HDU: any

Description: Detector read noise file name

4.161 NLINFILE

Key: nlinfile

Info: Detector nonlinearities file

Type: string

HDU: any

Description: Detector nonlinearities file

4.162 GRAPHTAB

Key: graphtab

Info: Graph table

Type: string

HDU: any

Description: Graph table

4.163 COMPTAB

Key: comptab

Info: Components table

Type: string

HDU: any

Description: Components table

4.164 IDCTAB

Key: idctab

Info: Image distortion correction table

Type: string

HDU: any

Description: Image distortion correction table

4.165 PHOTTAB

Key: phottab

Info: Photometric throughput table

Type: string

HDU: any

Description: Photometric throughput table

4.166 APERTAB

Key: apertab

Info: Relative aperture throughput table

Type: string

HDU: any

Description: Relative aperture throughput table

4.167 DETTAB

Key: dettab

Info: Detector calibration parameters

Type: string

HDU: any

Description: Detector calibration parameters

4.168 DGEOFILE

Key: dgeofile

Info: Distortion correction image

Type: string

HDU: any

Description: Distortion correction image

4.169 MDRIZTAB

Key: mdriztab

Info: MultiDrizzle parameter file

Type: string

HDU: any

Description: MultiDrizzle parameter file

4.170 DRIZTAB

Key: driztab

Info: Drizzle parameter file when not using MultiDrizzle

Type: string

HDU: any

Description: Drizzle parameter file when not using MultiDrizzle

4.171 ATODTAB

Key: atodtab

Info: Analog to digital correction file

Type: string

HDU: any

Description: Analog to digital correction file

4.172 BIASFILE

Key: biasfile

Info: Superbias image file name

Type: string

HDU: any

Description: Superbias image file name

4.173 FLSHFILE

Key: flshfile

Info: Post flash correction file name

Type: string

HDU: any

Description: Post flash correction file name

4.174 SHADFILE

Key: shadfile

Info: Shutter shading correction file

Type: string

HDU: any

Description: Shutter shading correction file

4.175 WAVECALF

Key: wavecalf

Info: Wavelength image file name

Type: string

HDU: any

Description: Wavelength image file name

4.176 SPTRCTAB

Key: sptrctab

Info: Spectrum trace table

Type: string

HDU: any

Description: Spectrum trace table

4.177 DISPTAB

Key: disptab

Info: Dispersion coefficient table

Type: string

HDU: any

Description: Dispersion coefficient table

4.178 LAMPTAB

Key: lamptab

Info: Template calibration lamp spectra table

Type: string

HDU: any

Description: Template calibration lamp spectra table

4.179 PCTAB

Key: pctab

Info: Photometry correction table

Type: string

HDU: any

Description: Photometry correction table

4.180 SDCTAB

Key: sdctab

Info: 2-D spatial distortion correction table

Type: string

HDU: any

Description: 2-D spatial distortion correction table

4.181 XTRACTAB

Key: xtractab

Info: Parameters for 1-D spectral extraction tab

Type: string

HDU: any

Description: Parameters for 1-D spectral extraction tab

4.182 WCPTAB

Key: wcptab

Info: Wavelength calibration parameter table

Type: string

HDU: any

Description: Wavelength calibration parameter table

4.183 MEANEXP

Key: meanexp

Info: Reference exposure time for parameters

Type: float

HDU: any

Description: Reference exposure time for parameters

4.184 SCALENSE

Key: scalense

Info: Multiplicative scale factor applied to noise

Type: float

HDU: any

Description: Multiplicative scale factor applied to noise

4.185 INITGUES

Key: initgues

Info: Initial guess method (MIN or MED)

Type: string

HDU: any

Description: Initial guess method (MIN or MED)

4.186 SKYSUB

Key: skysub

Info: Sky value subtracted (MODE or NONE)

Type: string

HDU: any

Description: Sky value subtracted (MODE or NONE)

4.187 SKYSUM

Key: skysum

Info: Sky level from the sum of all constituent images

Type: float

HDU: any

Description: Sky level from the sum of all constituent images

4.188 CRSIGMAS

Key: crsigmas

Info: Statistical rejection criteria

Type: string

HDU: any

Description: Statistical rejection criteria

4.189 CRRADIUS

Key: crradius

Info: Rejection propagation radius (pixels)

Type: float

HDU: any

Description: Rejection propagation radius (pixels)

4.190 CRTHRESH

Key: crthresh

Info: Rejection propagation threshold

Type: float

HDU: any

Description: TBC

4.191 BADINPDQ

Key: badinpdq

Info: Data quality flag bits to reject

Type: integer

HDU: any

Description: Data quality flag bits to reject

4.192 REJ_RATE

Key: rej_rate

Info: Rate at which pixels are affected by cosmic rays

Type: float

HDU: any

Description: Rate at which pixels are affected by cosmic rays

4.193 CRMASK

Key: crmask

Info: Flag CR-rejected pixels in input files (T/F)

Type: boolean

HDU: any

Description: Flag CR-rejected pixels in input files (T/F)

4.194 MDRIZSKY

Key: mdrizsky

Info: Sky value computed by MultiDrizzle

Type:

HDU: any

Description: Sky value computed by MultiDrizzle

4.195 PHOTMODE

Key: photmode

Info: Observation configuration mode for photometric calibration

Type: string

HDU: any

Description: Observation configuration mode for photometric calibration

4.196 PHOTFLAM

Key: photflam

Info: Inverse sensitivity, ergs/cm^2/Ang/electron

Type: float

HDU: any

Description: Inverse sensitivity, ergs/cm^2/Ang/electron

4.197 PHOTFNU

Key: photfnu

Info: Inverse sensitivity, Jy*sec/electron

Type: float

HDU: any

Description: Inverse sensitivity, Jy*sec/electron

4.198 PHOTZPT

Key: photzpt

Info: Magnitude zero point

Type: float

HDU: any

Description: Magnitude zero point

4.199 PHOTSYS

Key: photsys

Info: Photometric system

Type: float

HDU: string

Description: Photometric magnitude or flux system, e.g. Vega, AB, etc.

4.200 PHOTPLAM

Key: photplam

Info: Pivot wavelength (Angstroms)

Type: float

HDU: any

Description: Pivot wavelength (Angstroms)

4.201 PHOTBW

Key: photbw

Info: RMS bandwidth of filter plus detector (Angstroms)

Type: float

HDU: any

Description: RMS bandwidth of filter plus detector (Angstroms)

4.202 PATTERN1

Key: pattern1

Info: Primary pattern type

Type: string

HDU: any

Description: Primary pattern type: DITHER-BOX-MIN (4-step sampling), DITHER-LINE (2-point sampling) DITHER-LINE-3PT (3-point sampling), DITHER-BOX (4 point box sampling), GAP-LINE (2-point dithering over interchip gap) MOSAIC-LINE (full frame offset that uses single set of guide stars)

4.203 P1_SHAPE

Key: p1_shape

Info: Primary pattern shape

Type: string

HDU: any

Description: Primary pattern shape

4.204 P1_PURPS

Key: p1_purps

Info: Primary pattern purpose

Type: string

HDU: any

Description: Primary pattern purpose

4.205 P1_NPTS

Key: p1_npts

Info: Number of points in primary pattern

Type: integer

HDU: any

Description: Number of points in primary pattern

4.206 P1_PSPAC

Key: p1_pspac

Info: Point spacing for primary pattern (arc-sec)

Type: float

HDU: any

Description: Point spacing for primary pattern (arc-sec)

4.207 P1_LSPAC

Key: p1_lspac

Info: Line spacing for primary pattern (arc-sec)

Type: float

HDU: any

Description: Line spacing for primary pattern (arc-sec)

4.208 P1_ANGLE

Key: p1_angle

Info: Angle between sides of parallelogram pattern (deg)

Type: float

HDU: any

Description: Angle between sides of parallelogram pattern (deg)

4.209 P1_FRAME

Key: p1_frame

Info: Coordinate frame of primary pattern

Type: string

HDU: any

Description: Coordinate frame of primary pattern

4.210 P1_ORINT

Key: p1_orint

Info: Orientation of pattern to coordinate frame (deg)

Type: float

HDU: any

Description: Orientation of pattern to coordinate frame (deg)

4.211 P1_CENTR

Key: p1_centr

Info: Center pattern relative to pointing (yes/no)

Type: string

HDU: any

Description: Center pattern relative to pointing (yes/no)

4.212 PATTERN2

Key: pattern2

Info: Secondary pattern type

Type: string

HDU: any

Description: Primary pattern type: DITHER-BOX-MIN (4-step sampling), DITHER-LINE (2-point sampling), DITHER-LINE-3PT (3-point sampling), DITHER-BOX (4 point box sampling), GAP-LINE (2-point dithering over interchip gap), MOSAIC-LINE (full frame offset that uses single set of guide stars)

4.213 P2_SHAPE

Key: p2_shape

Info: Secondary pattern shape

Type: string

HDU: any

Description: Secondary pattern shape

4.214 P2_PURPS

Key: p2_purps

Info: Secondary pattern purpose

Type: string

HDU: any

Description: Secondary pattern purpose

4.215 P2_NPTS

Key: p2_npts

Info: Number of points in secondary pattern

Type: integer

HDU: any

Description: Number of points in secondary pattern

4.216 P2_PSPAC

Key: p2_pspac

Info: Point spacing for secondary pattern (arc-sec)

Type: float

HDU: any

Description: Point spacing for secondary pattern (arc-sec)

4.217 P2_LSPAC

Key: p2_lspac

Info: Line spacing for secondary pattern (arc-sec)

Type: float

HDU: any

Description: Line spacing for secondary pattern (arc-sec)

4.218 P2_ANGLE

Key: p2_angle

Info: Angle between sides of parallelogram pattern (deg)

Type: float

HDU: any

Description: Angle between sides of parallelogram pattern (deg)

4.219 P2_FRAME

Key: p2_frame

Info: Coordinate frame of secondary pattern

Type: string

HDU: any

Description: Coordinate frame of secondary pattern

4.220 P2_ORINT

Key: p2_orint

Info: Orientation of pattern to coordinate frame (deg)

Type: float

HDU: any

Description: Orientation of pattern to coordinate frame (deg)

4.221 P2_CENTR

Key: p2_centr

Info: Center pattern relative to pointing (yes/no)

Type: string

HDU: any

Description: Center pattern relative to pointing (yes/no)

4.222 PATTSTEP

Key: pattstep

Info: Position number of this point in the pattern

Type: integer

HDU: any

Description: Position number of this point in the pattern

4.223 RDMODE*n*

Key: rdmode[*n*]

Info: Detector amplifier readout configuration

Type: string

HDU: any

Description: Detector amplifier readout configuration

4.224 DETOFFS*n*

Key: detoffs[*n*]

Info: Commanded detector bias offset

Type: string

HDU: any

Description: Commanded detector bias offset

4.225 CMDGAIN

Key: cmdgain

Info: Commanded A-to-D conversion gain of detector

Type: float

HDU: any

Description: Commanded A-to-D conversion gain of detector

4.226 DETOFSAB

Key: detofsab

Info: Commanded detector bias offset for amps A&B

Type: integer

HDU: any

Description: Commanded detector bias offset for amps A&B

4.227 DETOFSCD

Key: detofscd

Info: Commanded detector bias offset for amps C&D

Type: integer

HDU: any

Description: Commanded detector bias offset for amps C&D

4.228 DETOFST*n*

Key: detofst([0-9a-zA-Z])

Info: Commanded detector bias offset for amplifier A

Type: string

HDU: any

Description: Commanded detector bias offset for amplifier A

4.229 ATODGN*n*

Key: atodg[*n*]

Info: Measured gain for amplifier n

Type: float

HDU: any

Description: Measured gain for amplifier n

4.230 RDNOISE*n*

Key: readns([0-9a-zA-Z])

Info: Measured readnoise for amplifier n

Type: float

HDU: any

Description: Measured readnoise for amplifier n

4.231 BIASLEV*n*

Key: biaslev([0-9a-zA-Z])

Info: Bias level for amplifier n

Type: float

HDU: any

Description: Bias level for amplifier n

4.232 DET_CHP

Key: det_chp

Info: Detector chip number

Type: integer

HDU: any

Description: Detector chip number

4.233 DETTEMP*n*

Key: dettemp[n]

Info: Detector temperature

Type: float

HDU: any

Description: Detector temperature

4.234 PRECOL*n*

Key: precol[*n*]

Info: Number of unbinned prescan columns per amplifier

Type: integer

HDU: any

Description: Number of unbinned prescan columns per amplifier

4.235 POSTPIX*n*

Key: postpix[*n*]

Info: Number of unbinned overscan columns per amplifier

Type: integer

HDU: any

Description: number of unbinned overscan columns per amplifier

4.236 ASN_ID

Key: asn_id

Info: Unique identifier assigned to association

Type: string

HDU: any

Description: Unique identifier assigned to association

4.237 ASN_TAB

Key: asn_tab

Info: Name of the association file

Type: string

HDU: any

Description: Name of the association file

4.238 ASN_MTYP

Key: asn_mtyp

Info: Role of the member in the association

Type: string

HDU: any

Description: Role of the member in the association

4.239 EXPNAME

Key: expname

Info: Exposure identifier

Type: string

HDU: extension

Description: Exposure identifier

4.240 LTV1

Key: ltv1

Info: Offset in X to subsection start

Type: float

HDU: any

Description: Offset in X to subsection start

4.241 LTV2

Key: ltv2

Info: Offset in Y to subsection start

Type: float

HDU: any

Description: Offset in Y to subsection start

4.242 LTM1_1

Key: ltm1_1

Info: Reciprocal of sampling rate in X

Type: float

HDU: any

Description: Reciprocal of sampling rate in X

4.243 LTM2_2

Key: ltm2_2

Info: Reciprocal of sampling rate in Y

Type: float

HDU: any

Description: Reciprocal of sampling rate in Y

4.244 ORIENTAT

Key: orientat

Info: Position angle of image Y-axis (degrees East of North)

Type: float

HDU: any

Description: Position angle of image Y-axis (degrees East of North). The value field shall contain a floating point number giving the position angle of the y axis of the detector projected on the sky, in degrees east of north. This keyword is synonymous with the CROTA2 WCS keyword.

4.245 PA_APER

Key: pa_aper

Info: Position angle of reference aperture center (deg)

Type: float

HDU: any

Description: Position angle of reference aperture center (deg)

4.246 RA_APER

Key: ra_aper

Info: Right ascension of aperture reference position

Type: float

HDU: any

Description: Right ascension of aperture reference position

4.247 DEC_APER

Key: dec_aper

Info: Declination of aperture reference position

Type: float

HDU: any

Description: Declination of aperture reference position

4.248 NCOMBINE

Key: ncombine

Info: Number of image sets combined, such as during CR rejection, or for any other purpose

Type: integer

HDU: any

Description: Number of image sets combined, such as during CR rejection, or for any other purpose. See EXPTIME description to note how the use of NCOMBINE may depend on EXPTIME when summing or averaging over multiple sub-exposures into one. Because there are ambiguities about what NCOMBINE may mean, to be more specific about the type of combining operation, prefer NCOMBSUM, NCOMBAVG, NCOMBMED, and promote the use of NCOMBINE that adheres to the definition given in EXPTIME when used in a science data HDU.

4.249 NCOMBSUM

Key: ncombsum

Info: Number of image sets combined via summing over N sub-exposures into one final exposure.

Type: integer

HDU: any

Description: Number of image sets combined via summing over N sub-exposures into one final exposure.

4.250 NCOMBAVG

Key: ncombavg

Info: Number of image sets combined via averaging over N sub-exposures into one final exposure.

Type: integer

HDU: any

Description: Number of image sets combined via averaging over N sub-exposures into one final exposure.

4.251 NCOMBMED

Key: ncombmed

Info: Number of image sets combined via median combining N sub-exposures into one final exposure.

Type: integer

HDU: any

Description: Number of image sets combined via median combining N sub-exposures into one final exposure.

4.252 CENTERA*n*

Key: centera[*n*]

Info: Subarray axis n center point in unbinned detector pix

Type: integer

HDU: any

Description: Subarray axis n center point in unbinned detector pix

4.253 SIZAXIS*n*

Key: sizaxis[*n*]

Info: Subarray axis n size in unbinned detector pixels

Type: integer

HDU: any

Description: Subarray axis n size in unbinned detector pixels

4.254 BINAXIS*n*

Key: binaxis[*n*]

Info: Axis n bin size in unbinned detector pixels

Type: integer

HDU: any

Description: Axis n bin size in unbinned detector pixels

4.255 SAMPNUM

Key: sampnum

Info: MULTIACCUM sample number

Type: integer

HDU: any

Description: MULTIACCUM sample number

4.256 SAMPTIME

Key: samptime

Info: Total integration time (sec)

Type: float

HDU: any

Description: Total integration time (sec)

4.257 DELTATIM

Key: deltatim

Info: Integration time of this sample (sec)

Type: float

HDU: any

Description: Integration time of this sample (sec)

4.258 ROUTTIME

Key: routtime

Info: UT time of array readout (MJD)

Type: Real

HDU: any

Description: UT time of array readout (MJD)

4.259 NGOODPIX

Key: ngoodpix

Info: Number of good pixels

Type: integer

HDU: any

Description: Number of good pixels

4.260 SDQFLAGS

Key: sdqflags

Info: Serious data quality flags

Type: integer

HDU: any

Description: Serious data quality flags

4.261 GOODMIN

Key: goodmin

Info: Minimum value of good pixels

Type: float

HDU: any

Description: Minimum value of good pixels

4.262 GOODMAX

Key: goodmax

Info: Maximum value of good pixels

Type: float

HDU: any

Description: Maximum value of good pixels

4.263 SNRMIN

Key: snrmin

Info: Minimum signal-to-noise of good pixels

Type: float

HDU: any

Description: Minimum signal-to-noise of good pixels

4.264 SNRMAX

Key: snrmax

Info: Maximum signal-to-noise of good pixels

Type: float

HDU: any

Description: Maximum signal-to-noise of good pixels

4.265 SNRMEAN

Key: snrmean

Info: Mean value of signal-to-noise of good pixels

Type: float

HDU: any

Description: Mean value of signal-to-noise of good pixels

4.266 SOFTERRS

Key: softerrs

Info: Number of soft error pixels (DQF1)

Type: integer

HDU: any

Description: Number of soft error pixels (DQF1)

4.267 MEANDARK

Key: meandark

Info: Average dark level subtracted

Type: float

HDU: any

Description: Average dark level subtracted

4.268 MEANBLEV

Key: meanblev

Info: Average bias level subtracted

Type: float

HDU: any

Description: Average bias level subtracted

4.269 MEANFLSH

Key: meanflsh

Info: Mean number of counts in post flash exposure

Type: float

HDU: any

Description: Mean number of counts in post flash exposure

4.270 OPERATOR

Key: operator

Info: Name of telescope operator

Type: string

HDU: any

Description: Name of telescope operator

4.271 FOCLENG

Key: focleng

Info: Telescope focal length [m]

Type: float

HDU: any

Description: Telescope focal length [m]

4.272 FOCSCALE

Key: focscale

Info: Telescope focal scale [arcsec/mm]

Type: float

HDU: any

Description: Telescope focal scale [arcsec/mm]

4.273 FOCVALUE

Key: focvalue

Info: Telescope M2 setting [mm]

Type: float

HDU: any

Description: Telescope M2 setting [mm]

4.274 P_ANGBEG

Key: p_angbeg

Info: Parallactic angle at beginning of exposure (deg)

Type: float

HDU: any

Description: Parallactic angle at beginning of exposure (deg)

4.275 P_ANGEND

Key: p_angend

Info: Parallactic angle at end of exposure (deg)

Type: float

HDU: any

Description: Parallactic angle at end of exposure (deg)

4.276 TRCK_RA

Key: trck_ra

Info: Tracking rate in RA (mas/sec)

Type: float

HDU: any

Description: Tracking rate in RA (mas/sec)

4.277 TRCK_DEC

Key: trck_dec

Info: Tracking rate in DEC (mas/sec)

Type: float

HDU: any

Description: Tracking rate in DEC (mas/sec)

4.278 TRCKSTAT

Key: trckstat

Info: Tracking status

Type: Status

HDU: any

Description: Tracking status

4.279 AIRMASS

Key: airmass

Info: Airmass at the center of exposure

Type: float

HDU: any

Description: Airmass of an exposure, sec(zenith angle). The value field shall contain a floating point number giving the air mass during the observation by a ground based telescope. The value of the airmass is often approximated by the secant of the zenith angle and has a value of 1.0 at the zenith and increases toward the horizon. This value is assumed to correspond to the start of the observation unless another interpretation is clearly explained in the comment field.

4.280 AIRM_BEG

Key: airm_beg

Info: Airmass at start of exposure

Type: float

HDU: any

Description: Airmass at start of exposure, sec(zenith angle)

4.281 AIRM_END

Key: airm_end

Info: Airmass at end of exposure

Type: float

HDU: any

Description: Airmass at end of exposure, sec(zenith angle)

4.282 ALT_BEG

Key: alt_beg

Info: Telescope altitude (deg) at start of exposure

Type: float

HDU: any

Description: Telescope altitude (deg) at start of exposure

4.283 ALT_MID

Key: alt_mid

Info: Telescope altitude (deg) at middle of exposure

Type: float

HDU: any

Description: Telescope altitude (deg) at middle of exposure

4.284 ALT_END

Key: alt_end

Info: Telescope altitude (deg) at end of exposure

Type: float

HDU: any

Description: Telescope altitude (deg) at end of exposure

4.285 AZ_BEG

Key: azi_beg

Info: Telescope azimuth (deg) at start of exposure

Type: float

HDU: any

Description: Telescope azimuth (deg) at start of exposure

4.286 AZ_MID

Key: azi_mid

Info: Telescope azimuth (deg) at middle of of exposure

Type: float

HDU: any

Description: Telescope azimuth (deg) at middle of exposure

4.287 AZ_END

Key: azi_end

Info: Telescope azimuth (deg) at end of exposure

Type: float

HDU: any

Description: Telescope azimuth (deg) at end of exposure

4.288 GEO_ELEV

Key: geo_elev

Info: Telescope elevation above sea level [m]

Type: float

HDU: any

Description: Telescope elevation above sea level [m]

4.289 MOONPHAS

Key: moonphas

Info: Moon phase

Type: float

HDU: any

Description: Moon phase

4.290 SEEING

Key: seeing

Info: Natural atmospheric seeing FWHM, in arcsec, measured using stars

Type: float

HDU: any

Description: Natural atmospheric seeing FWHM, in arcsec, measured using stars.

4.291 WIND_SPD

Key: wind_spd

Info: Average wind speed during observation [km/hr]

Type: float

HDU: any

Description: Average wind speed during observation [km/hr]

4.292 WIND_DIR

Key: wind_dir

Info: Average wind direction during observation [deg]

Type: float

HDU: any

Description: Average wind direction during observation [deg]

4.293 HUMIDITY

Key: humidity

Info: Average relative humidity during observation [%]

Type: float

HDU: any

Description: Average relative humidity during observation [%]

4.294 PRESSURE

Key: pressure

Info: Average atmospheric pressure during observation [mm]

Type: float

HDU: any

Description: Average atmospheric pressure during observation [mm]

4.295 AMBTEMP

Key: ambtemp

Info: Average ambient temperature during observation [C]

Type: float

HDU: any

Description: Average ambient temperature during observation [C]

4.296 DEWPOINT

Key: dewpoint

Info: Average dewpoint during observation [C]

Type: float

HDU: any

Description: Average dewpoint during observation [C]

4.297 INS_ID

Key: ins_id

Info: Instrument control software ID

Type: string

HDU: any

Description: Instrument control software ID

4.298 ICS_VERS

Key: ics_vers

Info: Instrument control software version and installation date

Type: string

HDU: any

Description: Instrument control software version and installation date

4.299 PROCVERS

Key: procvers

Info: Pipeline processing version

Type: string

HDU: any

Description: Pipeline processing version

4.300 ADC_STAT

Key: adc_stat

Info: ADC status

Type: string

HDU: any

Description: ADC status

4.301 ADC_POS

Key: adc_pos

Info: ADC position

Type: string

HDU: any

Description: ADC position

4.302 INS_OPER

Key: ins_oper

Info: Instrument operator

Type: string

HDU: any

Description: Instrument operator

4.303 DISP_PA

Key: disp_pa

Info: Disperser, grating or grism, position angle (N=0, E=90) [deg]

Type: string

HDU: any

Description: Disperser, grating or grism, position angle (N=0, E=90) [deg]

4.304 GRATING*n*

Key: grating[*n*]

Info: Name of the grating

Type:

HDU: any

Description: The value field shall contain a character string which gives the name of the defraction grating that was used during the observation. More than 1 grating may be listed by using the GRATINGn indexed keyword. The value 'none' or 'NONE' indicates that no grating was used.

4.305 DISP_NAM

Key: disp_nam

Info: Name of disperser, grating or grism

Type: string

HDU: any

Description: Name of disperser, grating or grism

4.306 DISP_ID

Key: disp_id

Info: ID of disperser, grating, or grism.

Type: string

HDU: any

Description: Grating ID

4.307 DISPERS

Key: dispers

Info: Grating or grism dispersion (Angstrom/mm)

Type: float

HDU: any

Description: Grating or grism dispersion (Angstrom/mm)

4.308 DISP_WAV

Key: disp_wav

Info: Disperser, grating or grism, central wavelength (Angstrom)

Type: string

HDU: any

Description: Disperser, grating or grism, central wavelength (Angstrom)

4.309 DISPAXIS

Key: dispaxis

Info: Dispersion axis: 1= axis 1, 2 = axis 2, none

Type: string

HDU: any

Description: Dispersion axis: 1 = axis 2, 2 = axis 2, none

4.310 LAMP_ID

Key: lamp_id

Info: Lamp ID

Type: string

HDU: any

Description: Lamp ID

4.311 LAMP_VOL

Key: lamp_vol

Info: Lamp voltage status

Type: float

HDU: any

Description: Lamp voltage status

4.312 INS_MODE

Key: ins_mode

Info: Instrument mode used

Type: string

HDU: any

Description: Instrument mode used

4.313 INS_TEMP

Key: ins_temp

Info: Instrument temperature (C)

Type: float

HDU: any

Description: Instrument temperature (C)

4.314 INS_OPTP

Key: ins_optp

Info: Instrument optical pathway name

Type: string

HDU: any

Description: Instrument optical pathway name

4.315 OPT_ELEM

Key: opt_elem

Info: Optical element in use

Type: string

HDU: any

Description: Optical element in use, e.g. disperser name

4.316 SLIT_WID

Key: slit_wid

Info: Slit width [arcsec]

Type: float

HDU: any

Description: Slit width [arcsec]

4.317 SLIT_LEN

Key: slit_len

Info: Slit length [arcsec]

Type: float

HDU: any

Description: Slit length [arcsec]

4.318 SLIT_PA

Key: slit_pa

Info: Slit position angle [deg]

Type: float

HDU: any

Description: Slit position angle [deg]

4.319 SLIT_RA

Key: slit_ra

Info: Slit right ascension [deg]

Type: float

HDU: any

Description: Slit right ascension [deg]

4.320 SLIT_DEC

Key: slit_dec

Info: Slit declination [deg]

Type: float

HDU: any

Description: Slit declination [deg]

4.321 SPORDER

Key: sporder

Info: Spectral order

Type: integer

HDU: any

Description: Spectral order

4.322 PLATESC*n*

Key: platesc[*n*]

Info: Detector plate scale [arcsec]

Type:

HDU: any

Description: Detector plate scale [arcsec]. Corresponds to IVOA 's_pixel_scale'.

4.323 GUIDSTA1

Key: guidsta1

Info: Telescope autoguider 1 status

Type: string

HDU: any

Description: Telescope autoguider 1 status

4.324 GUID_RA1

Key: guid_ra1

Info: Telescope autoguider 1 right ascension

Type: float

HDU: any

Description: Telescope autoguider 1 right ascension

4.325 GUID_DC1

Key: guid_dc1

Info: Telescope autoguider 1 declination

Type: float

HDU: any

Description: Telescope autoguider 1 declination

4.326 GUIDSTA2

Key: guidsta2

Info: Telescope autoguider 2 status

Type: string

HDU: any

Description: Telescope autoguider 2 status

4.327 GUID_RA2

Key: guid_ra2

Info: Telescope autoguider 2 right ascension

Type: float

HDU: any

Description: Telescope autoguider 2 right ascension

4.328 GUID_DC2

Key: guid_dc2

Info: Telescope autoguider 2 declination

Type: float

HDU: any

Description: Telescope autoguider 2 declination

4.329 GUIDSTA3

Key: guidsta3

Info: Telescope autoguider 3 status

Type: string

HDU: any

Description: Telescope autoguider 3 status

4.330 GUID_RA3

Key: guid_ra3

Info: Telescope autoguider 3 right ascension

Type: float

HDU: any

Description: Telescope autoguider 3 right ascension

4.331 GUID_DC3

Key: guid_dc3

Info: Telescope autoguider 3 declination

Type: float

HDU: any

Description: Telescope autoguider 3 declination

4.332 PHAS_STA

Key: phas_sta

Info: Telescope phasing camera status

Type: string

HDU: any

Description: Telescope phasing camera status

4.333 PHAS_RA

Key: phas_ra

Info: Telescope phasing camera right ascension

Type: float

HDU: any

Description: Telescope phasing camera right ascension

4.334 PHAS_DEC

Key: phas_dec

Info: Telescope phasing camera declination

Type: float

HDU: any

Description: Telescope phasing camera declination

4.335 OBS_PID

Key: obs_pid

Info: Program ID corresponding to observing block

Type: string

HDU: any

Description: Program ID corresponding to Observing block

4.336 OBS_ID

Key: obs_id

Info: Unique observation ID

Type: string

HDU: any

Description: This value field shall contain a character string which uniquely identifies the dataset contained in the FITS file. This is typically a sequence number that can contain a mixture of numerical and character values. In the case where multiple data products are available for an observation (e.g. with different calibration levels), the obs_id value will be the same for each product of the observation This is equivalent to the dataset name for many archives where dataset name could have many files associated with them. This keyword corresponds to IVOA 'obs_id'.

4.337 OBS_NAME

Key: obs_name

Info: Observing block name

Type: string

HDU: any

Description: Observing block name

4.338 OBS_GRP

Key: obs_grp

Info: Observing block group (linked blocks)

Type: string

HDU: any

Description: Observing block group (linked blocks)

4.339 OBS_SEQN

Key: obs_seqn

Info: Sequence number in observing block template

Type: integer

HDU: any

Description: Sequence number in an observing block template

4.340 OBSET_ID

Key: obset_id

Info: Observation set ID

Type: string

HDU: any

Description: Observation set ID, corresponds to IVOA 'obs_creator_did'.

4.341 TPL_ID

Key: tpl_id

Info: Observing template ID

Type: float

HDU: any

Description: Observing template ID

4.342 TPL_name

Key: tpl_name

Info: Observing template name

Type: string

HDU: any

Description: Observing template name

4.343 TPL_SEQN

Key: tpl_seqn

Info: Template sequence number within block

Type: integer

HDU: any

Description: Template sequence number within block

4.344 TPL_NEXP

Key: tpl_nexp

Info: Number of exposures within sequence template

Type: integer

HDU: any

Description: Number of exposures within sequence template

4.345 TPL_EXPN

Key: tpl_expn

Info: Exposure number within template

Type: integer

HDU: any

Description: Exposure number within template

4.346 DPR_CATG

Key: dpr_catg

Info: Data product file, data product category

Type: string

HDU: any

Description: Data product file, data product category [TBC]

4.347 DPR_TYPE

Key: dpr_type

Info: Data product file, observation type

Type: string

HDU: any

Description: Data product file, Observation type [TBC]

4.348 DPR_TECH

Key: dpr_tech

Info: Data product file, observation technique

Type: string

HDU: any

Description: Gives the technique used for the observation and can take on more than one value. The values should be separated with commas, from general to specific. [TBC]

4.349 TITLE

Key: title

Info: Title for the observation or data

Type: string

HDU: any

Description: The value field shall contain a character string giving a title that is suitable for display purposes, e.g., for annotation on images or plots of the data contained in the HDU. Also corresponds to IVOA 'DataID.Title' Spectral Data Model.

4.350 TLMIN*n*

Key: tlmin[*n*]

Info: Minimum legal values for a column

Type: float

HDU: extension

Description: [TLMINn] Minimum legal values for a column. Minimum legal values for a column. The value field of this indexed keyword shall contain a floating point number specifying the lower bound of the legal range of physical values that may be represented in column n of the table. The column may contain values that are less than this legal minimum value but the interpretation of such values is not defined here. The value of this keyword is typically used as the mininum value when constructing a histogram of the values in the column. This keyword may only be used in 'TABLE' or 'BINTABLE' extensions.

4.351 TLMAX*n*

Key: tlmax[*n*]

Info: Maximum legal values for a column

Type: float

HDU: extension

Description: [TLMAXn] Maximum legal values for a column. Maximum legal values for a column. The value field of this indexed keyword shall contain a floating point number specifying the upper bound of the legal range of physical values that may be represented in column n of the table. The column may contain values that are greater than this legal maximum value but the interpretation of such values is not defined here. The value of this keyword is typically used as the maxinum value when constructing a histogram of the values in the column. This keyword may only be used in 'TABLE' or 'BINTABLE' extensions.

4.352 PIXVALUE

Key: pixvalue

Info: Value of all the pixels in an uniform image

Type: float

HDU: any

Description: When all pixels in an image are of a single value, that value is stored as PIXVALUE and the HDU has no binary data section. The use of PIXVALUE is not allowed for a SCI extension.

4.353 TDESC*n*

Key: tdesc[*n*]

Info: Column description

Type: string

HDU: extension

Description: [TDESCn] The value field of this indexed keyword contains a character string that describes the content of the table column.

4.354 TSORTKEY

Key: tsortkey

Info: Defines the sort order of a table

Type: string

HDU: any

Description: The value field shall contain a character string that defines the order in which the rows in the current FITS ASCII or binary table extension have been sorted. The character string lists the name (as given by the TTYPEn keyword) of the primary sort column, optionally followed by the names of any secondary sort column(s). The presence of this keyword indicates that the rows in the table have been sorted first by the values in the primary sort column; any rows that have the same value in the primary column have been further sorted by the values in the secondary sort column and so on for all the specified columns. If more than one column is specified by TSORTKEY then the names must be separated by a comma. One or more spaces are also allowed between the comma and the following column name. By default, columns are sorted in ascending order, but a minus sign may precede the column name to indicate that the rows are sorted in descending order. This keyword may only be used in 'TABLE' or 'BINTABLE' extensions. Example: TSORTKEY = 'TIME, RA, DEC'.

4.355 USE_DATE

Key: use_date

Info: Use this file for obs taken on or after this date

Type: string

HDU: all

Description: Use this file for observations taken on or after the date specified in the value field. This is used e.g. in instrument or calibration reference tables.

4.356 CONFIGUR

Key: configure

Info: Version of checksum algorithm

Type:

HDU: any

Description: The value field shall contain a character string that uniquely defines the configuration state, or version, of the software processing system that generated the data contained in the HDU. This keyword differs from the CREATOR keyword in that it give the name and version of the overall processing system and not just the name and version of a single program.

4.357 CONTINE

Key: continue

Info: Denotes the CONTINUE long string keyword convention

Type:

HDU: any

Description: The CONTINUE keyword, when followed by spaces in columns 9 and 10 of the card image and a character string enclosed in single quotes starting in column 11 or higher, indicates that the quoted string should be treated as a continuation of the character string value in the previous header keyword. To conform to this convention, the character string value on the previous keyword must end with the ampersand character ('&'), but the ampersand is not part of the value string and should be deleted before concatenating the strings together. The character string value may be continued on any number of consecutive CONTINUE keywords, thus effectively allowing arbitrarily long strings to be written as keyword values.

4.358 CREATOR

Key: creator

Info: The name of the software task that created the file

Type:

HDU: any

Description: The value field shall contain a character string giving the name, and optionally, the version of the program that originally created the current FITS HDU. Example: 'TASKNAME V1.2.3'

4.359 DATAMODE

Key: datamode

Info: Pre-processor data mode

Type:

HDU: any

Description: The value field shall contain a character string which identifies the configuration or mode of the pre-processing software that operated on the raw instrumental data to generate the data that is recorded in the FITS file. Example: some X-ray satellite data may be recorded in 'BRIGHT', 'FAINT', or 'FAST' data mode.

4.360 RA_PNT

Key: ra_pnt

Info: Right ascension of the pointed direction of the instrument

Type:

HDU: any

Description: Right ascension of the pointed direction of the instrument. The value field shall contain a floating point number giving the Right Ascension of the pointing direction in units of decimal degrees. The coordinate reference frame is given by the RADECSYS keyword, and the coordinate epoch is given by the EQUINOX keyword. The precise definition of this keyword is instrument-specific, but typically the pointed direction corresponds to the optical axis of the instrument. This keyword gives a mean value in cases where the pointing axis was not fixed during the entire observation.

4.361 DEC_PNT

Key: dec_pnt

Info: Declination of the pointed direction of the instrument

Type:

HDU: any

Description: Declination of the pointed direction of the instrument. The value field shall contain a floating point number giving the declination of the pointing direction in units of decimal degrees. The coordinate reference frame is given by the RADECSYS keyword, and the coordinate epoch is given by the EQUINOX keyword. The precise definition of this keyword is instrument-specific, but typically the pointed direction corresponds to the optical axis of the instrument. This keyword gives a mean value in cases where the pointing axis was not fixed during the entire observation.

4.362 HDUCLASS

Key: hduclass

Info: General identifier for the classification of the data

Type:

HDU: any

Description: The value field shall contain a character string that identifies the domain to which the associated HDUCLASn keywords apply. This keyword typically identifies the institution or project that has defined the allowed set of values for the associated hierarchical HDUCLASn keywords.

4.363 HDUCLAS*n*

Key: hduclas[*n*]

Info: Hierarchical classification of the data

Type:

HDU: any

Description: The value field shall contain a character string that identifies the domain to which the associated HDUCLASn keywords apply. This keyword typically identifies the institution or project that has defined the allowed set of values for the associated hierarchical HDUCLASn keywords.

4.364 HDUDOC

Key: hdudoc

Info: Reference to document describing the data format

Type:

HDU: any

Description: The value field shall contain a character string that gives a reference to a document that describes the allowed values that may be assigned to the HDUCLASn data classification keywords.

4.365 HDUVERS

Key: hduvers

Info:

Type:

HDU: any

Description: The value field shall contain a character string that gives the specific version of the document referenced by HDUDOC.

4.366 LATITUDE

Key: latitude

Info: Geographic latitude of the observation

Type:

HDU: any

Description: The value field shall contain a floating point number giving the geographic latitude from which the observation was made in units of degrees.

4.367 SATURATE

Key: saturate

Info: Data value at which saturation occurs

Type:

HDU: any

Description: The value field shall contain an integer giving the data value at which the detector becomes saturated. This keyword value may differ from the maximum value implied by the BITPIX in that more bits may be allocated in the FITS pixel values than the detector can accommodate.

4.368 TDBIN*n*

Key: tdbin[*n*]

Info: Default histogram bin size for the column

Type:

HDU: any

Description: Default histogram bin size for the column. The value field of this indexed keyword shall contain a floating point number specifying the suggested bin size when producing a histogram of the values in column n. This keyword is typically used in conjunction the TLMINn and TLMAXn keywords when constructing a histogram of the values in column n, such that the histogram ranges from TLMINn to TLMAXn with the histogram bin size given by TDBINn. This keyword may only be used in 'TABLE' or 'BINTABLE' extensions.

4.369 TDMAX*n*

Key: tdmax[*n*]

Info: Maximum physical value in the column

Type:

HDU: any

Description: The value field of this indexed keyword shall contain a floating point number specifying the maximum valid physical value represented in column n of the table, exclusive of any special values. This keyword may only be used in 'TABLE' or 'BINTABLE' extensions and is analogous to the DATAMAX keyword used for FITS images.

4.370 TDMIN*n*

Key: tdmin[*n*]

Info: Minimum physical value in the column

Type:

HDU: any

Description: The value field of this indexed keyword shall contain a floating point number specifying the minimum valid physical value represented in column n of the table, exclusive of any special values. This keyword may only be used in 'TABLE' or 'BINTABLE' extensions and is analogous to the DATAMIN keyword used for FITS images.

4.371 MIRRCONF

Key: mirrconf

Info: Telescope mirror configuration [TBD]

Type: string

HDU: any

Description: Telescope mirror configuration [TBD]

CHAPTER

FIVE

REFERENCES

List of Figures

List of Tables