Particle Physics and Astronomy

Research Council

Isaac Newton Group

NAOMI FITS Headers

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Chapter 1 Introduction

This document contains the details of the FITS headers that are to be collected from the NAOMI subsystem following a run which included NAOMI as part of the observing configuration.

The details of the headers described within are based on discussions with R. Myers, N. Dipper and C. Benn.

Chapter 2 NAOMI FITS Headers

This chapter outlines both the mechanism through which NAOMI headers are to be collected and the details of the NAOMI headers which are included in the resulting FITS file following a NAOMI based integration.

2.1 The Header Collection Mechanism

The headers which are collected from NAOMI have their source in the NAOMI EPICS mechanism control system and the NAOMI real−time correction system. The values of these headers are reflected in the NAOMI Electra Process Monitor (EPM) from where they are ultimately collected following an integration. The EPM is a process hosted upon *navis.ing.iac.es*, the dedicated NAOMI Sparc host , and is used as a process state monitor.

As the NAOMI system does not export the headers using the standard DRAMA/EPICS type mechanisms, the generic *packetCollection*[1] task has been modified so that it can interact with the NAOMI EPM and extract the headers using the NAOMI sequencer API[2] provided by Durham.

The *packetCollection* task is a DRAMA server that runs on the WHT OCS computer *taurus*. This task respects the DRAMA actions ARCHIVE_B and ARCHIVE_E and both of these actions implement the interface required by the UltraDAS data acquisition system[3] for header collection.

Header collection is initiated by the UltraDAS data acquisition system at the start and end of an integration. Once commanded by UltraDAS, the *packetCollection* task then acquires the headers from the EPM within NAOMI subsystem.

Header files are stored by the *packetCollection* task in the directory */wht/var* following their creation from where they are collected by UltraDAS and then subsequently entered into the FITS file.

2.2 Details of the NAOMI Headers

This section contains the details of the headers that are collected from the NAOMI system following a NAOMI based integration.

All the NAOMI related header packets will start with the prefix AO.

Collection time is specified as either *write* or *update*. If a header is specified as being collected at *write* time, the details will be collected at the start of the integration. If a header is specified as being collected at *update* time, the details of the header will be collected at the end of the integration.

Packet Name	EPM Process Variable Name	FITS Data Type	Collection Time	Description
AOSYS	AoSystem	String	Write	This is the name of the adaptive optics unit.
AODFM	DMtype	String	Write	The deformable mirror that is in use
AOLENSLT	LensletName	String	Write	Name of lenslet used.

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1   See WHT−NAOMI−15 NAOMI Software User Guide
2   See WHT−NAOMI−16 NAOMI Sequencer API ICD
3   See INS−DAS−22 Interfaces for collection of FITS−header packets

Packet Name	EPM Process Variable Name	FITS Data Type	Collection Time	Description
AOWFILT	FilterNumber	Integer	Write	The filter number that was used.
AOWEXP	WFSintegrationTime	Real	Write	The length of the WFS integration in millisecs.
AOWBIN	WFSbinningMode	Integer	Write	Binning mode used by the WFS
AOGAIN	GainGlobal	Real	Write	Global gain in centroid units
AOWOFF	WFSoffsets	String	Write	WFS Offsets
AOLOOP	NaomiLoopState	String	Write	AO loop state
AOFOCOFF	FocusOffloadState	String	Write	Focus offload state
AOOPTALG	OptAlgorithm	String	Write	AO optical algorithm
AORECON	ReconAlgorithm	String	Write	Reconstructor algorithm
AOCAMSYN	CameraSyncState	String	Write	Camera sync state
AOGDX	PickoffPosnX	Real	Write	WFS pickoff x position (arcsec)
AOGDY	PickoffPosnY	Real	Write	WFS pickoff y position (arcsec)
AODMX	DMstagePosnX	Real	Write	DM stage x position (mm)
AODMY	DMstagePosnY	Real	Write	DM stage y position (mm)
AODMTMP1	TempDM	Real	Write	DM temperature 1 (C)
AODMTMP2	Temp2	Real	Write	DM temperature 2 (C)
AOLAMP	NCUlampState	String	Write	NCU lamp state
AOLMPINT	NCUlampIntensity	Real	Write	NCU lamp intensity
AOMASK	NCUmaskState	String	Write	NCU mask state
AOBSPLIT	NCUbeamsplitState	String	Write	NCU beamsplitter state
AOSEGLIM	SegTiltLimit	Real	Write	Segment tip tilt limit