MRO FTT/NAS & FLC

ICD List and Expected Content

MRO-LIS-CAM-0000-0107

The Cambridge FTT Team

rev 1.1

31 August 2010

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Change Record

Revision	Date	Author(s)	Changes
0.1	2010-08-18	JSY	Initial version
1.0	2010-08-27	MF	Minor amendments
1.1	2010-08-31	JSY	Minor formatting changes

Objective

To list the ICDs that will be written for the FTT/NAS and FLC, and to define the content we expect them to have.

Acronyms and Abbreviations

AMOS Advanced Mechanical and Optical Systems (UTM vendor)
EIE European Industrial Engineering (UTE vendor)
FTT Fast Tip-Tilt
FLC First Light Camera
ICD Interface Control Document
ISS Interferometer Supervisory System
MROI Magdalena Ridge Observatory Interferometer
NAS Narrow-field Acquisition System
NMT New Mexico Tech
NOT Nasmyth Optical Table
TBC To be confirmed
TBD To be determined
UT Unit Telescope
UTE Unit Telescope Enclosure
UTM Unit Telescope Mount

Table of Contents

1 Introduction

The FTT/NA system interfaces to five major subsystems, and the FLC to four of these (there is no interface from the FLC to the FTTA). These interfaces will be controlled using Interface Control Documents developed by the Cambridge team. Two provisional ICDs already exist as parts of documentation supplied by other vendors (see Table 1). We propose to separate and detail these interfaces in the set of ICDs we develop for the FTT/NA and FLC systems, referring to the source documentation as necessary. Where the content of an ICD is expected to be identical or overlapping for the FTT/NAS and FLC, a single ICD will cover both systems. We have listed separate FTT/NAS and FLC ICDs to the ISS since the FLC is expected to implement only a small subset of the FTT/NAS commands and data streams.

The proposed set of interface documents are listed in Table 1. The expected contents of each ICD are given in the following section.

ICD reference number	Owner	Description
MRO-ICD-CAM-1100-0108 FTT/NAS-FTTA MRO-ICD-AMO-6000-025 FTTA-FTT	CAM AMOS	Specific FTTA-FTT interface General UT electrical ICD
MRO-ICD-CAM-1000-0109 FTT/NAS,FLC-UTE MRO-ICD-EIE-0032 UTE-FTT	CAM EIE	FTT/NAS & FLC to Enclosure ICD Enclosure to FTT system ICD
MRO-ICD-CAM-1000-0110 FTT/NAS,FLC-NOT	CAM	FTT/NAS & FLC to optical table ICD
MRO-ICD-CAM-1000-0111 FTT/NAS,FLC-UT	CAM	FTT/NAS & FLC to UT optical ICD
MRO-ICD-CAM-1100-0112 FTT/NAS-ISS	CAM	FTT/NAS to ISS ICD
MRO-ICD-CAM-1200-0113 FLC-ISS	CAM	FLC to ISS ICD

Table 1: List of FTT/NAS and FLC interface documents

2 Cambridge controlled ICDs

A provisional list of contents is given for each ICD in the following subsections.

2.1 FTTA-FTT interface

This document defines the connections between the signal connectors of the FTTA controller which is located in EIE electronics housing Q5 and the FTT-NAS electronics interface also located in Q5. The contents of MRO-ICD-CAM-1100-0108 (FTT/NAS-FTTA) are as follows:

1. A table of electrical connections in which the FTTA signals are defined
2. An annex detailing the connector type and pin connections for the tip-tilt drive and monitoring analogue signals

2.2 FTT/NAS & FLC to Enclosure ICD

This document covers the interfaces between the electronics housing and the FTT/NAS or FLC electronics, the cable route between the Nasmyth optical table and the electronics housing, and the services to be made available for use by the FTT/NAS or FLC camera and its enclosure mounted on the optical table.

The contents of MRO-ICD-CAM-1000-0109 (FTT/NAS,FLC-UTE) are as follows:

1. Electronics housing Q5 – space available for FTT/NAS or FLC system electronics
2. Power available for FTT/NAS or FLC – single phase power required
3. Cable route from Nasmyth optical table to electronics housing in Q5 – the cable route has been re-assessed and should be short enough to accommodate the Andor camera cable (maximum length 6 m). If not, a shorter cable route has been identified but would need to be designed and installed
4. Cooling system – cooling loop1 (electronics housing) is desirable for camera and camera enclosure cooling
5. Interface location – is located at S edge of Nasmyth optical table but needs to be defined with necessary connections for coolant and dry air supply

2.3 FTT/NAS & FLC to optical table ICD

This ICD describes the space envelopes that are available to the FTT/NAS and FLC components located on the Nasmyth optical table and the space occupied by those components. The FTT/NAS layout is restricted by the position of other subsystems and components placed on the optical table but can influence the relative positions of some of these components to some extent. The FLC layout is less restricted, but we expect the wavefront sensor that will be used for UT commissioning to also be present on the optical table.

The contents of MRO-ICD-CAM-1000-0110 (FTT/NAS,FLC-NOT) are as follows:

1. A description and reference to an engineering drawing of the layout of FTT/NA system components

on the optical table, including the height of each component

2. A description and reference to an engineering drawing of the layout of FLC components on the optical table, including the height of each component
3. Details of the interface of the FTT/NAS component base-plate to the optical table
4. Details of the interface of the camera mount to the optical table
5. Details of the camera enclosure fixing to the optical table
6. Details of the interface to the corner cube (FTT/NAS only)
7. Details of the interface to the dichroic (FTT/NAS only)
8. Details of the cover required for the Nasmyth optical table and its minimum height above the table
9. Reference to INT-403-DWG-0100 which describes Nasmyth optical table space allocations and mass budget

2.4 FTT/NAS & FLC to UT optical ICD

This document defines the interface between the optical beam exiting the UT outer elevation axis and the components of the FTT/NAS or FLC placed on the Nasmyth optical table. It does not address the layout of components nor space envelopes, only the relationship of the components as a system to the exit beam from the telescope.

The contents of MRO-ICD-CAM-1000-0111 (FTT/NAS,FLC-UT) are as follows:

1. Interface requirements
2. Interface design description

2.5 FTT/NAS to ISS ICD

This ICD describes the software interfaces of the FTT/NA system to the ISS.

The contents of MRO-ICD-CAM-1100-0112 (FTT/NAS-ISS) are as follows:

1. High-level description of the software interfaces to the FTT/NAS
2. References to spreadsheets defining details of the interfaces (system commands, monitor points, faults and alerts etc.)

2.6 FLC to ISS ICD

This ICD describes the software interfaces of the FLC system to the ISS.

The contents of MRO-ICD-CAM-1200-0113 (FLC-ISS) are as follows:

1. High-level description of the software interfaces to the FLC
2. References to spreadsheets defining details of the interfaces (system commands, monitor points, faults and alerts etc.)