

P48 12k Mosaic Camera Interface Control Document

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Abstract

This document defines the interface to the camera control computer for the P48 12k Mosaic instrument for the Palomar Transient Factory (PTF) Project. The current state of this document is ROUGH OUTLINE ONLY.

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1 Introduction

1.1 Scope

This camera interface control document (ICD) describes the software interface layer to the 12k Mosaic camera host computer. It is intended to be used by a programmer wishing to interface to the 12k Mosaic camera.

The camera host computer has the dedicated task of controlling the camera and does not allow for intercommunication with other subsystems that might exist in an observatory. The camera host computer will allow communications between the outside world and the camera, the shutter, the temperature controller, and *TBD*:the vacuum gauge. See Figure 1.

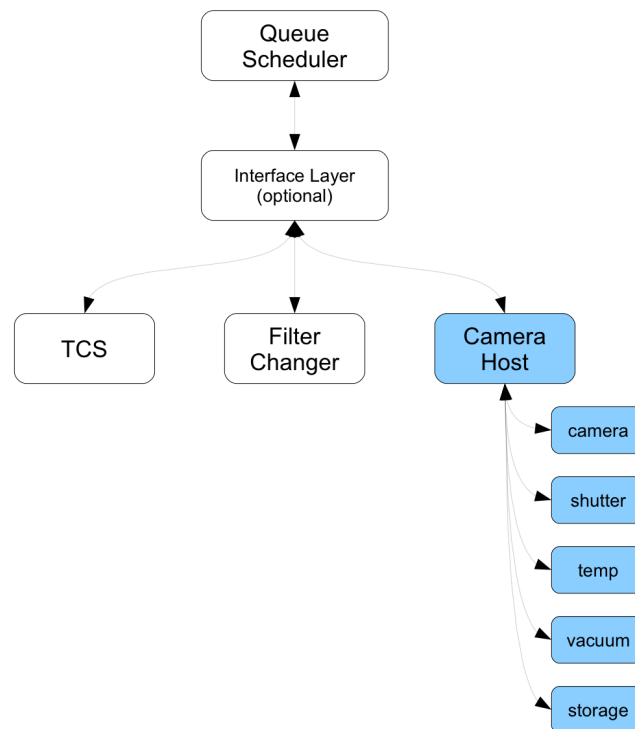


Figure 1: P48 Mosaic Block Diagram. The camera interface is limited to those items shaded in blue.

1.2 Overview

The camera host computer communicates directly with the 12k Mosaic camera via fiber optic link utilizing ARC/SDSU PCI boards and controllers. *TBD*:There is a graphical user interface (GUI) available, primarily for testing purposes, for use by someone present at the console of the camera host computer. There is also be a client-server based application programming interface (API), typically accessed via an ethernet connection.

1.3 API

The programming interface to the camera computer is based on a client-server model utilizing TCP/IP sockets. The camera host computer acts as the server and accepts TCP socket connections from a remote client. The client can send a command through an open socket to the server. The server will act on the command, respond appropriately to the client through the same socket, then the server will close the socket connection. *(TBD: keep it open or close each time?)*

2 Camera Host Computer

2.1 Hardware

The camera host computer is based on a single Intel Pentium-4 3.2GHz CPU. It contains 1GB RAM, a 200GB disk for the operating system, software and user accounts, and a 1TB disk for data storage.

The 1TB data storage disk device is `/dev/hdb1`, mounted locally as `/data`, and can be exported and cross-mounted on a remote computer. *(TBD: this is probably restricted in the Palomar network – find out!)*

2.2 Operating System

The computer runs the Linux operating system distributed as Fedora Core 8. The kernel version is 2.6.24.5-85.fc8 and cannot be changed without altering the PCI device driver supplied by Scott Streit at Astronomical Research Cameras (ARC).

3 Commands

This section describes the commands that are accepted by the camera host computer. The server answers every command with a response. The response is in the form of a structure. The structure contains (TBD)

3.1 Engineering

Engineering commands are used for low level communications with the hardware.

3.1.1 Test Data Link

command: ~

response:

3.1.2 Upload DSP software

Upload DSP software to the specified board.

command: ~

response:

3.1.3 Download DSP software

Download DSP software from the specified board.

command: ~

response:

3.1.4 Clock Multiplexer Select

command: ~

response:

3.1.5 Shutter Control

Used to manually open and close the shutter.

command: ~

response:

3.1.6 Vacuum Gauge Control

Used to turn the ionization gauge on and off.

command: `vacgauge[on | off]`

response:

3.1.7 Read Vacuum Gauge

Used to read the output of the vacuum gauge.

command: `readvac`

response:

3.2 Diagnostics

Diagnostic commands are used for checking the general health and state of the camera subsystems.

3.2.1 Check Vacuum State

Used to check the state of the vacuum. Alarm limit is defined by engineering command described in section ??.

command: `checkvac`

response:

3.2.2 Check Temperature

command: ~

response:

3.3 Setup

Setup commands are typically used for setting up prior to an exposure.

3.3.1 Set Header Keyword

command: ~

response:

3.3.2 Set Exposure Type

command: ~

response:

3.3.3 Set Exposure Time

command: ~

response:

3.3.4 Set Number of Exposures

command: ~

response:

3.3.5 Set Filename Base String

command: ~

response:

3.3.6 Set Region of Interest

command: ~

response:

3.4 Exposure

Exposure commands used to start exposures.

3.4.1 Start Sequence of Exposures

command: ~

response:

3.4.2 Shorten Exposure

command: ~

response:

3.4.3 Abort Exposure

command: ~

response:

4 Example Interface

This section describes an example client interface for communicating with the camera host server. The following functions are written in C and are platform independent.