

Gemini Near Infrared Coronagraphic Imager
Instrument Control Rack#1
GEMINI SDN3006

MKIR# NICI-800-500-00
Rev 0.1 (prerelease)
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1 Gemini Near Infrared Coronagraphic Imager , Instrument Control Rack#1

1.1 Overview

1.1.1 Purpose

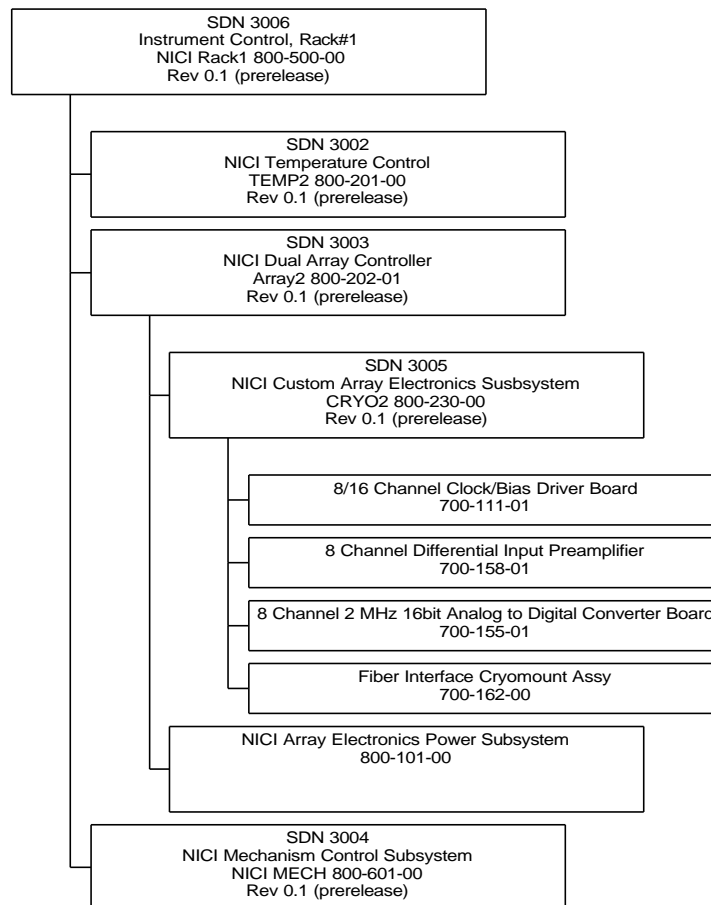
This document details the subsystem or box level description of the NICI Instrument Control Rack#1. The intent is to have an appropriate document for recording MKIR and Gemini supplied equipment that may not be covered by other subassembly documentation. See the lower level documents for more detailed information.

1.2 Instrument Control, Rack#1

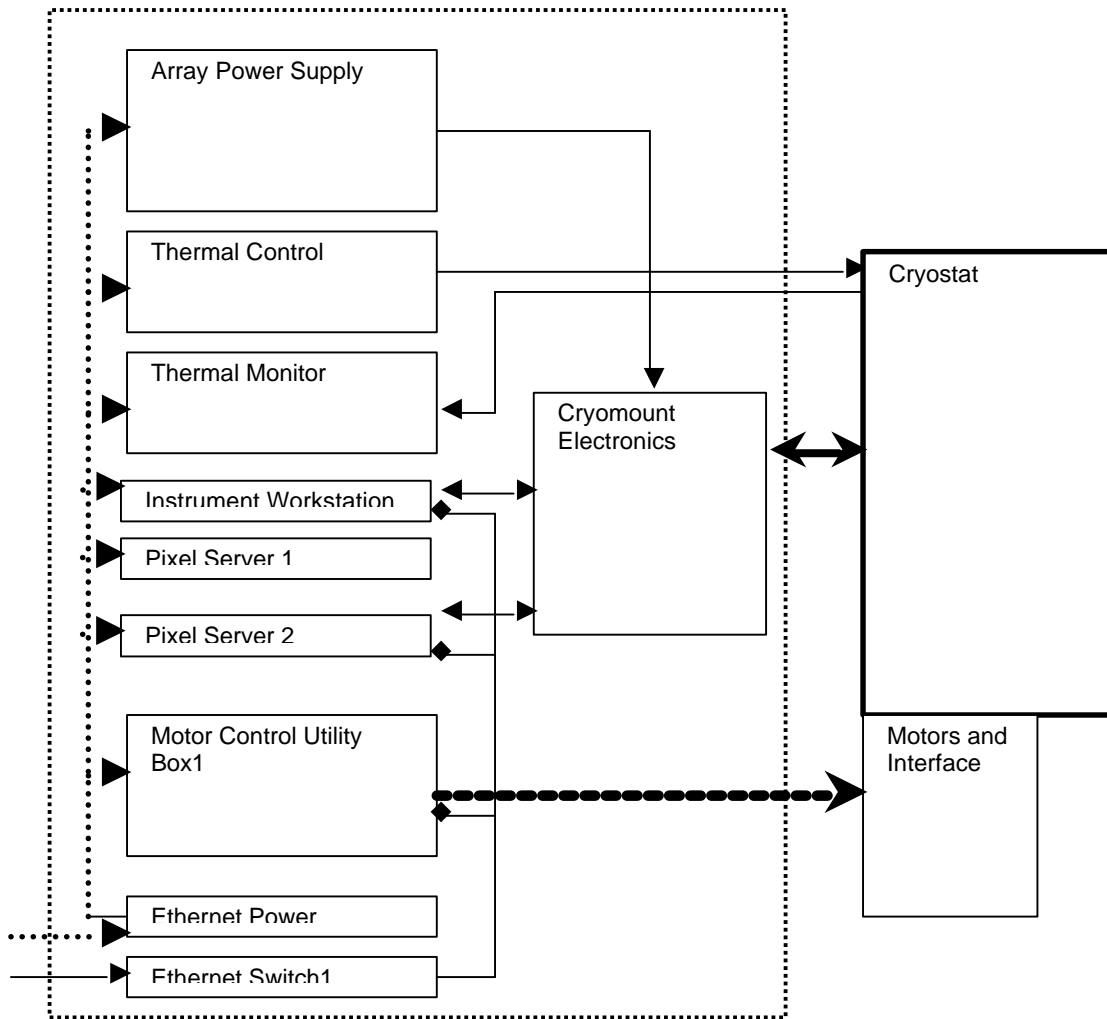
1.2.1 Functional Description

Rack #1 houses the majority of the NICI camera and motor control electronics. The functions of the dual array drive and readout, cryogenic thermal control, monitoring and mechanism control are housed in major subsystems in this rack. Major interfaces are made to the cryostat and cryostat mounted motor systems.

1.2.2 Reference Documents



1.2.3 Block Diagram



1.2.4 Mechanical Dimensions

The 1.3 meter rack external dimensions.

External Height	Inches	Meters	External Width	Inches	Meters	External Depth	Inches	Meters
		1300mm						

The 1.3 meter rack internal dimensions.

Available front rack space	Inches	Meters	Available Width HP	Inches	Meters	Available Depth	Inches	Meters
22.5U	31.50in	800.10mm	84	16.75in	425.45mm		31.50in	800.10mm

1.2.5 Subassembly Mechanical Details

Assemblies										
Number	Subassembly Name	Manufacturer's Part	Height (in)	Height (mm)	U	Width (in)	Width (mm)	HP	Depth (in)	Depth (mm)
1	Instrument Workstation	Compaq Proliant DL360	1.65in	41.91mm	1	16.75in	425.45mm	84	16.75in	425.45mm
2	Pixel Server 1	Compaq Proliant DL360	1.65in	41.91mm	1	16.75in	425.45mm	84	16.75in	425.45mm
3	Pixel Server 2	Compaq Proliant DL360	1.65in	41.91mm	1	16.75in	425.45mm	84	16.75in	425.45mm
5	Array Power Supply	HP 66000	7.50in	190.50mm	5	16.75in	425.45mm	84	26.70in	678.18mm
6	Thermal Control	Lakeshore 332S X 2	3.50in	88.90mm	2	16.75in	425.45mm	84	22.75in	577.85mm
7	Thermal Monitor	Lakeshore 218	3.50in	88.90mm	2	16.75in	425.45mm	84	16.75in	425.45mm
8	Motor Control Utility Box1	Elma Type14 3U chassis	4.95in	125.73mm	3	16.75in	425.45mm	84	20.96in	532.38mm
9	Ethernet Power Control1	Baytech RPC3	1.65in	41.91mm	1	8.55in	217.17mm	43	5.25in	133.35mm
10	Ethernet Switch1	TBD	1.65in	41.91mm	1	16.75in	425.45mm	84	5.25in	133.35mm
11	Cryomount Electronics	MKIR	9.90in	251.46mm	6	16.75in	425.45mm	84	12.0in	304.80mm
				Rack#1	24					

1.2.6 Rack #1 subassembly physical positions

Rack #1 TOP DOWN LAYOUT					800.10mm available
Number	Subassembly Name	Manufacturer's Part	Height (in)	Height (mm)	U
FRONT MOUNT					
4	Array Power Supply	HP 66000	7.50in	190.50mm	5
5	Thermal Control	Lakeshore 332S X 2	3.50in	88.90mm	2
COMBINED MOUNTING					
FRONT MOUNT					
6	Thermal Monitor	Lakeshore 218	1.65in	41.91mm	1
1	Instrument Workstation	Compaq Proliant DL360	1.65in	41.91mm	1
2	Pixel Server 1	Compaq Proliant DL360	1.65in	41.91mm	1
3	Pixel Server 2	Compaq Proliant DL360	3.30in	83.82mm	1
REAR MOUNT					
10	Cryomount Electronics	MKIR	9.90in	251.46mm	6*
FRONT MOUNT					
7	Motor Control Utility Box1	Elma Type14 3U chassis	4.95in	125.73mm	3
8	Ethernet Power Control1	Baytech RPC3	1.65in	41.91mm	1
9	Ethernet Switch1	TBD	1.65in	41.91mm	1
front subtotal					18

1.2.7 Power Dissipation Estimates

See the supporting subsystem documents for a more detailed breakdown.

Subassembly Name	Power	Voltage input	Current input
APD power Supply1	90.0W	120.0VAC	.53A
APD power Supply1	90.0W	120.0VAC	.53A
AO Utility Box2	72.0W	120.0VAC	.85A
Ethernet Switch2	5.0W	120.0VAC	.06A
Ethernet Power Control2	5.0W	120.0VAC	.06A

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AO Computer	330.0W	120.0VAC	3.89A
AO Control Chassis1	200.0W	120.0VAC	2.36A
AO Control Chassis2	200.0W	120.0VAC	2.36A
Total	1618.7W		

1.2.8 Subassembly Weight Estimates

Subassembly Name	Weight (lbs)	Weight (kg)
Pixel Server 1	50.0lb	22.68kg
Pixel Server 2	50.0lb	22.68kg
Array Power Supply	69.0lb	31.30kg
Thermal Control	21.0lb	9.53kg
Thermal Monitor	6.6lb	2.99kg
Motor Control Utility Box1	30.0lb	13.61kg
Ethernet Power Control1	3.0lb	1.36kg
Ethernet Switch1	3.0lb	1.36kg
Cryomount Electronics	25.0lb	11.34kg
TOTAL	257.60lb	116.85kg

1.3 Gemini Supplied Equipment