

MicroLogix Programmable Controller at the Observatory

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Fecha de creación 05/12/2014 14:30:00

Page 1

Last Actualization 10/12/2014

Table Contents:

- 1.0 Scope
- 2.0 Abbreviations and Description
- 3.0 Photos PLC's components
- 4.0 MicroLogix PLC's used at the Telescope
- 5.0 Spares parts at the Focal Station
- 6.0 Micrologix PLC Systems Overview
 - 6.01 PLC Glas Safety System Overview
 - 6.02 WHT Oil Recirculation Temperature Monitoring and Chiller Plant Control Overview
 - 6.03 WHT PLC Dichroic Changer Overview
 - 6.04 WHT PLC Dome Control System Overview
 - 6.05 PLC Robodimm Dome Tower Overview
 - 6.06 Robodimm Telescope Limits Pico PLC Overview
 - 6.07 PLC Nitrogen Plant Overview
- 7.0 Documentation

1.0 Scope

The purpose of this document is to make a new inventory and update the list of the Micrologix PLC used at the telescopes, furthermore to know the condition and location of spares parts as well the state of the program backup memory.

2.0 Abbreviations and Description

ML= PLC type MicroLogix family, there are 5 controller types ML1000, ML1100, ML1200, ML400 and ML1500.

In the observatory we are using ML1100, ML1200 and ML1500 see table 1 for location.

1761-NET-ENIW= this is the reference for the Ethernet Module.

1761-NET-AIC+ = Advanced Interface Converter, used for isolated RS232 or RS-485 converter.

1762-IQ16= 16 Digital Input Module 10-30V DC.

1762-OW16= Digital Output Relay Module.

Carlos Martin

Fecha de creación 05/12/2014 14:30:00

Page 2

Last Actualization

10/12/2014

1762-OF4= Analog Output Module.
1761-CBL-AM00= Mini Din pin to pin cable.
1763MM1= Memory Module for ML1100.
1762MM1= Memory Module for ML1200.

3.0 Photos PLC's Components

Figure 1 (MicroLogix 1200R)



Figure 2 (Ethernet Module 1761-NET-ENIW)



Figure 3 (1761-NET-AIC+)



Figure 4 (Memory Module for ML1100 and ML1200)

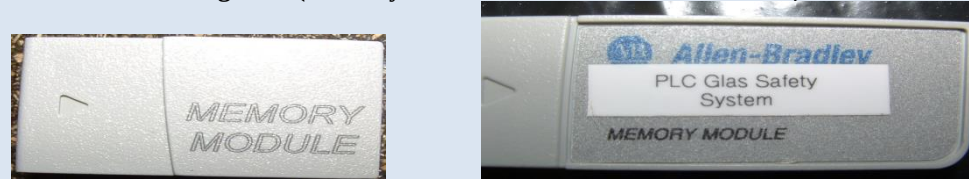


Figure 5 (MicroLogix1100 with I/O Modules)



Figure 6 ML1400



4.0 MicroLogix PLC's used at the Telescopes

The following table shows the Micrologix PLC's used at the telescope.

Table 1 (PLC System Used at the Telescopes)

System	PLC Processor	Ethernet Interface	Interface Converter AIC+	1762-IQ16 Digital Input	1762-OW16 Relay Output	1762-OF4 Analog Output	1762-IF4 Analog Inputs	Special PLC Cables	Memory Module	Note
Dome PLC1	ML1100 1763-L16BWA	Internal Port	-	1	-	-	-	-	1 Backup, locate at the test focal station	Locate at Control Room
Dome PLC2	ML1100 1763-L16BWA	Internal Port	-	-	-	1 Dome Rot. Speed	-	-	1 Backup, locate at the test focal station	Locate at Dome
Robodim PLC	ML1200	1761-NET-ENI	-	-	-	-	1 Temp+Hum Measuring	1761-CBL-AM00 to connect ENIW	Clock + memory Module	Memory module not used.
Dichroic Changer OASIS	ML1200	1761-NET-ENIW	-	2	2	-		1761-CBL-AM00 to Connect ENIW	1 Backup, locate at the test focal station blue cabinet	
Glass Safety System	ML1200 1762-L40BWAR 2 RS232 outputs	-	1 to transmit RS232 strings	1	-	-		1761-CBL-AM00 to connect AIC+	1 Backup, locate at the test focal station blue cabinet	
Limits At the Robodim	PICO PLC	-	-	-	-	-		-	-	Used for Altitude Limits
Used Only for Test and leaning	ML1500 + AMCI 3601	-	-	-	-	-	-	-	-	Used for test with a stepper controller module.
OIL Plant	ML1400 1762-L32BWAA	Internal Port	-	-	-	-	1 Temp.	-	-	Oil plat Temp. Monitoring and chiller plant enable
Nitrogen Plant	ML1400 1762-L32BWAA	Internal Port	-					-	-	Controlling the old N2 plant

5.0 Spares parts at the Focal Station

The following table 2 and 3 shows the PLC spares located at the focal station blue cabinet, label PLC.

Table 2 (MicroLogix PLC Spares at the Test Focal Station)

Item	Spare Units	Used for	Location	Contact	Note
Processor ML1200	1	-Robodim -Dichroic Changer -Glass Safety System	Test Focal Station Blue Cabinet	CMP	The spare PLC is compatible for the 3 systems.
Processor ML1100	2	Dome PLC1 Dome PC2	Test Focal Station Blue Cabinet	CMP	1763-L16BWA SER. B REV. B FRN 5.0 is configured like PLC#1 1763-L16BWA SER. A REV. C FRN 3.0 this is the original dome plc2, was replace by major fault errors, it was tested for 8 month at the “test focal station “ and I have 0 failures.
Processor ML1400	2	Oil Plant temp. and chiller plant control enable/disable N2 Plant	1 at the Test Focal Station Blue Cabinet 1 at the aluminizing PLC cabinet	CMP	
Digital Input 1762-IQ16	2	-Dichroic Changer -Glass Safety System	Test Focal Station Blue Cabinet	CMP	
Digital Output 1762-OW16	4	-Dome PLC1 Dome PLC2 -Dichroic Changer	Test Focal Station Blue Cabinet	CMP	One module was left at the dome plc2, it must be removed where possible
Analog Output 1762-OF4	1	Dome PLC 2 DAC	Test Focal Station Blue Cabinet	CMP	
Analog Input 1762-IF4	1	Robodim Oil Plant	Test Focal Station Blue Cabinet	CMP	
Advanced Interface Converter 1761-NET-AIC	1	Glass Safety System	Test Focal Station Blue Cabinet	CMP	
Ethernet Interface 1761-NET_ENIW	1	-Robodim -Dichroic Changer	Test Focal Station Blue Cabinet	CMP	
Cable 1761-CBL-AM00	1	-Robodim -Dichroic Changer -Glass Safety System	Test Focal Station Blue Cabinet	CMP	Mini Din to Mini Din. Communication cable for connecting AIC+ and ENIW Ethernet interface

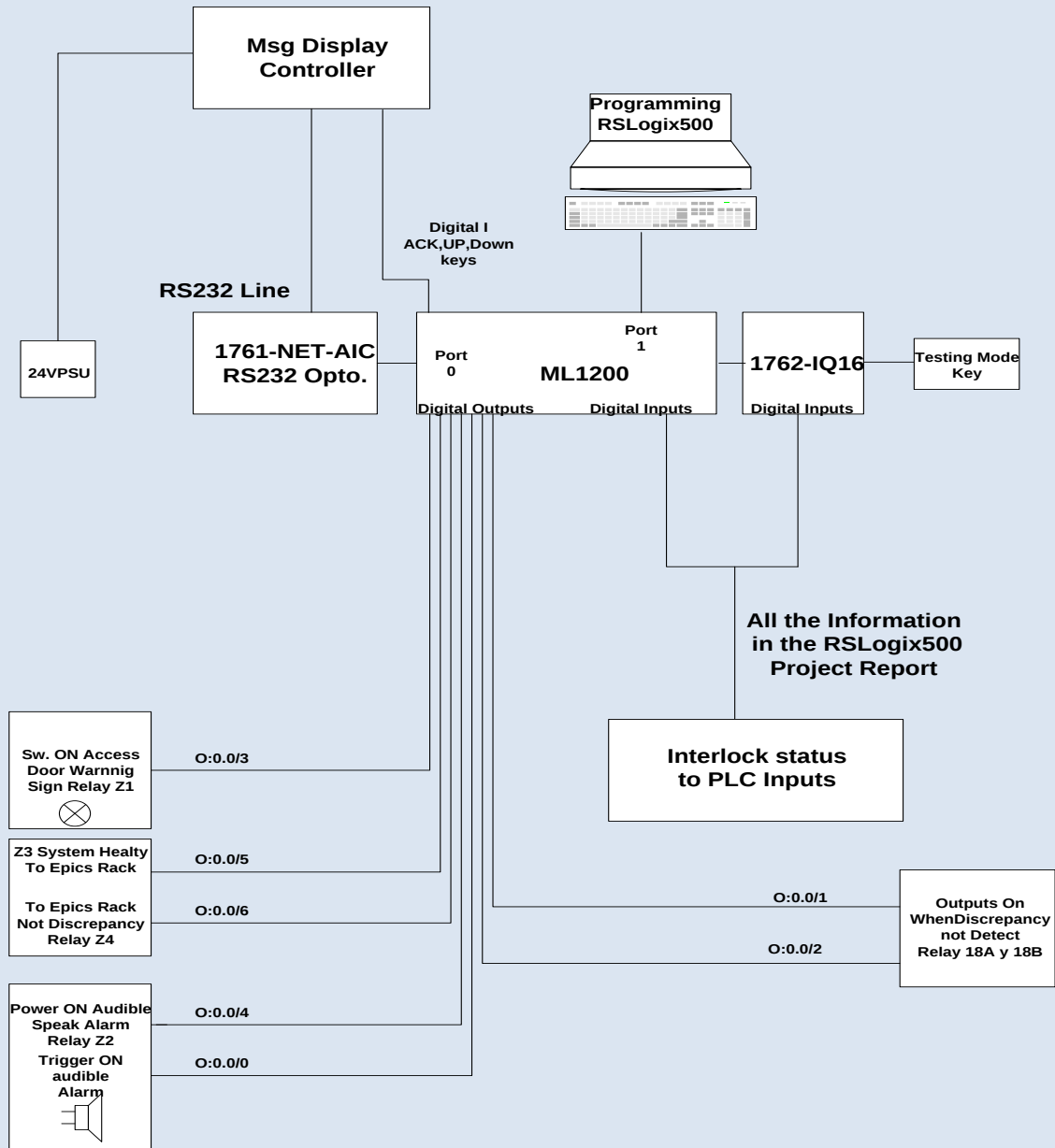
Table 3 (MicroLogix PLC Spares at the Test Focal Station)

Item	Spare Units	Used for	Location	Contact	Note
Micrologix Programming Cable	3	Any Micrologix PLC	Test Focal Station Blue Cabinet	CMP	Only used for programming micrologix PLC.
1763MM1	1	Dome PLC 1	Test Focal Station Blue Cabinet	CMP	Program memory module Backup for Dome PLC1
1763MM1	1	Dome PLC 2	Test Focal Station Blue Cabinet	CMP	Program memory module Backup for Dome PLC1
1763MM1	1	Spare Module, no program store	Test Focal Station Blue Cabinet	CMP	
1762-MM1	1	-Dichroic Changer	Test Focal Station Blue Cabinet	CMP	Program memory module Backup for Dichroic Changer.
1762-MM1	1	-Glass Safety System	Test Focal Station Blue Cabinet	CMP	Program memory module Backup for Glass Safety System.

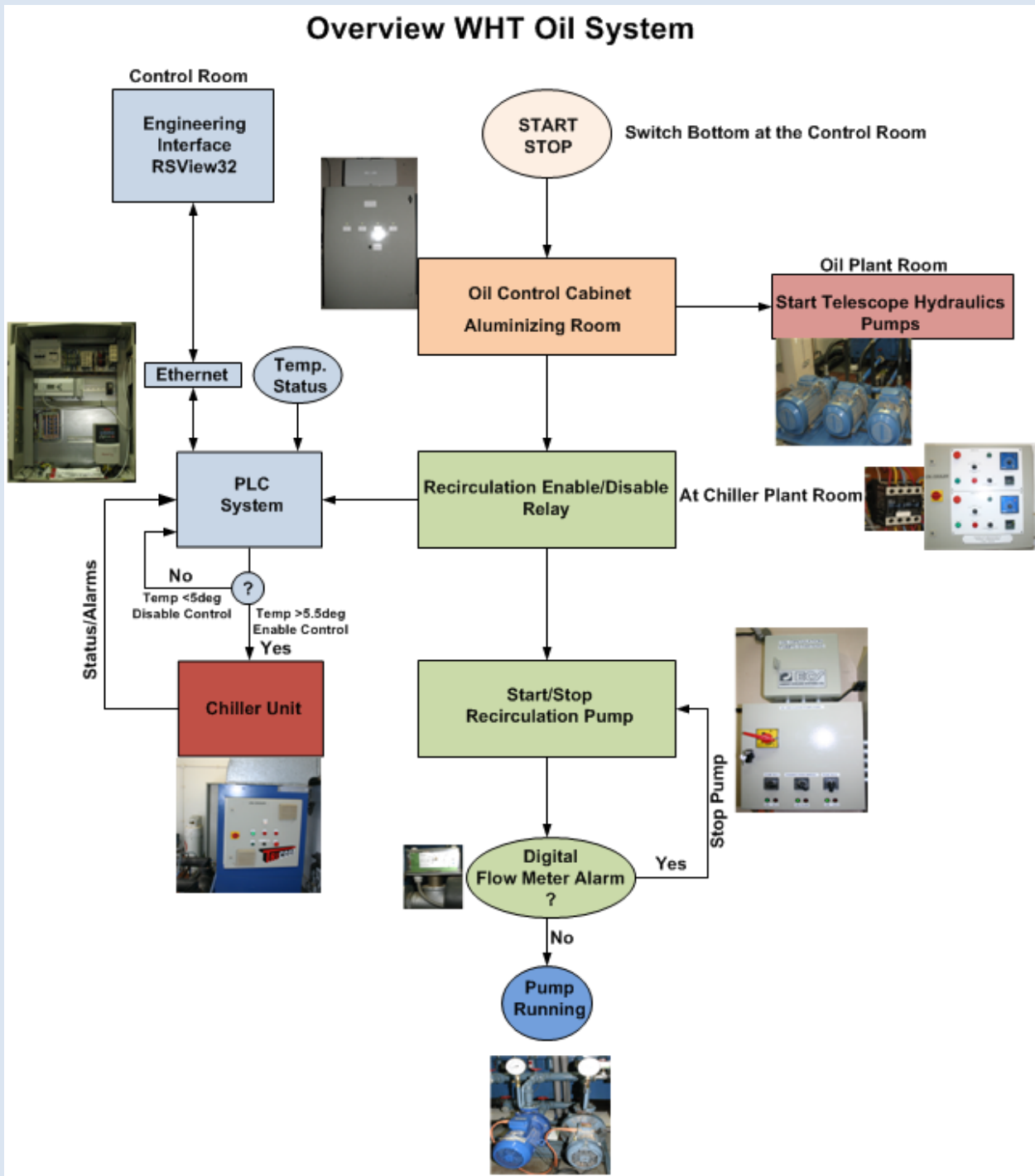
6.0 Micrologix PLC Systems overview

6.01 PLC Glas Safety System

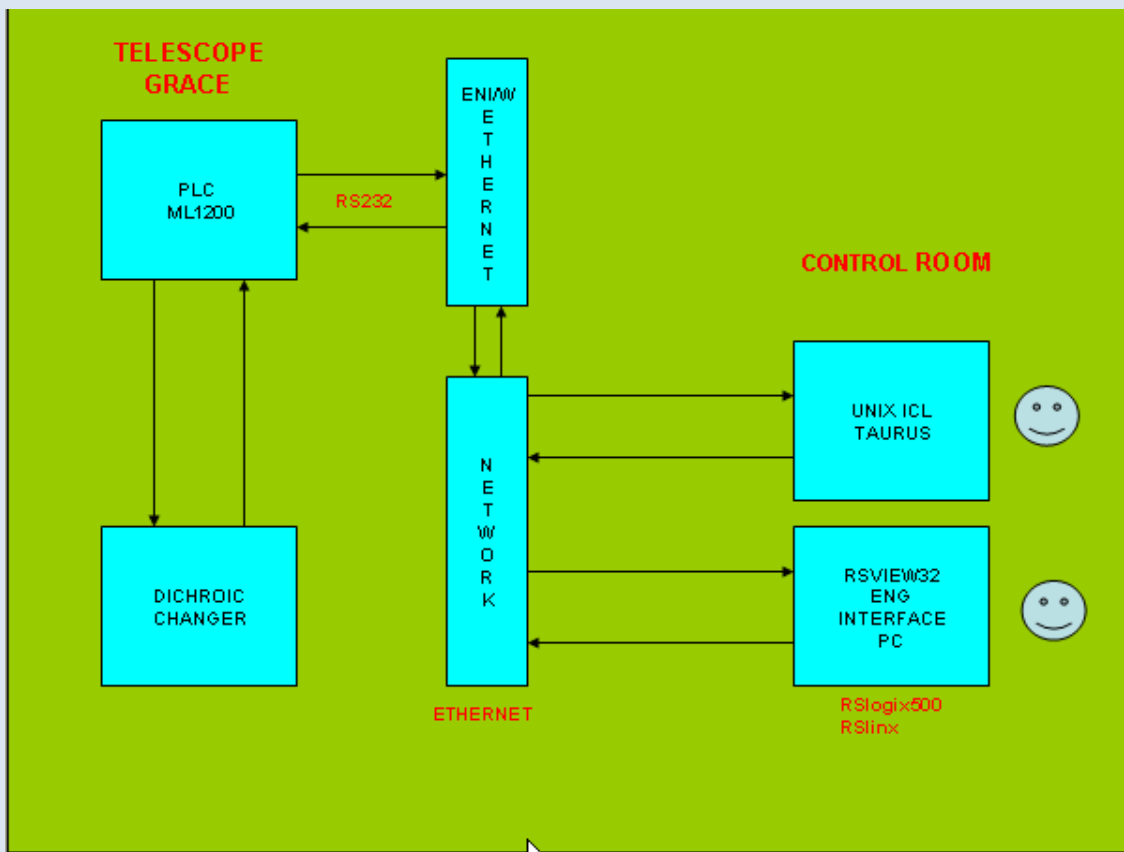
PLC Glas Safety System Diagram



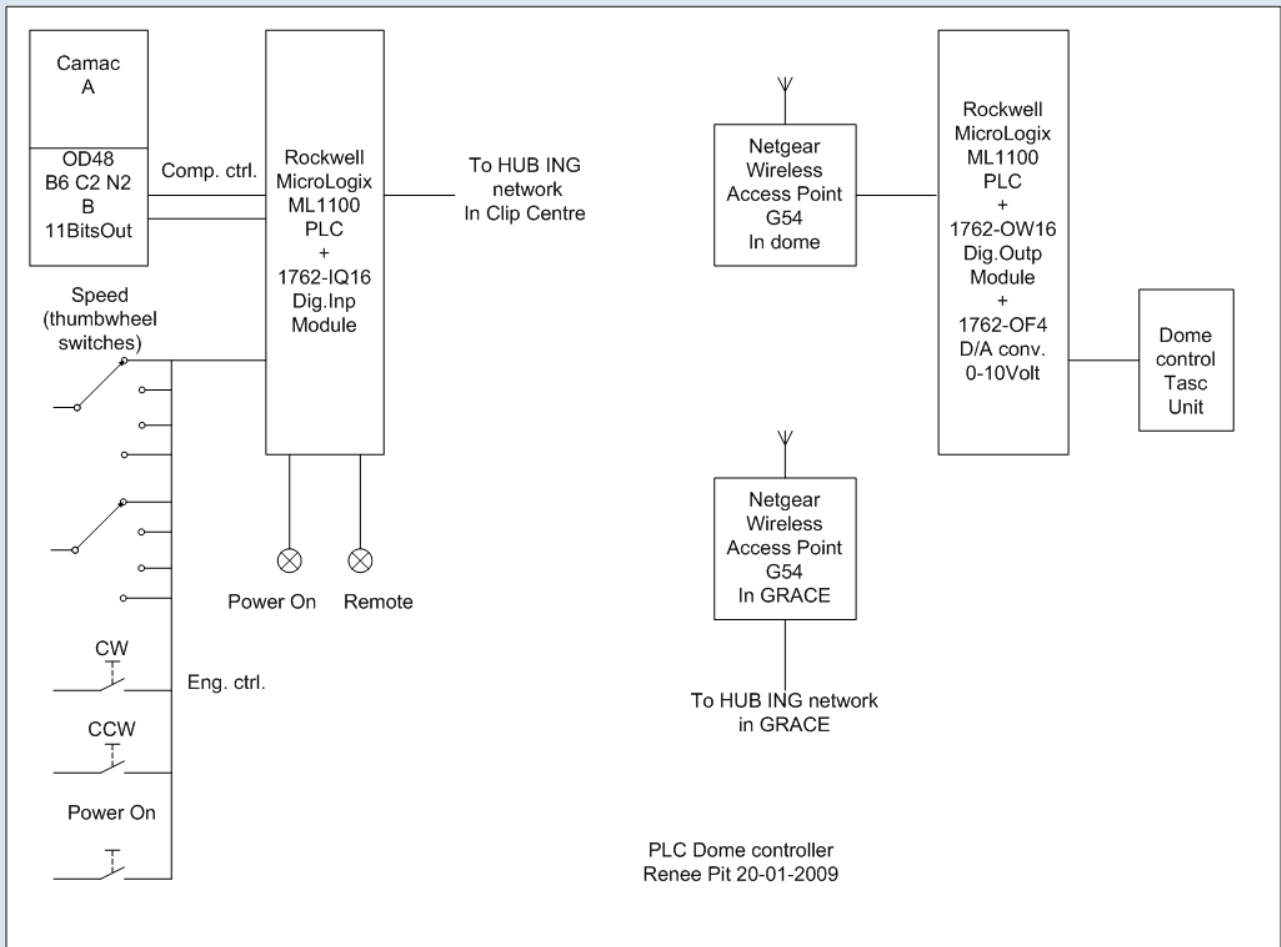
6.02 WHT Oil Recirculation Temperature Monitoring and Chiller Plant Control Overview



6.03 WHT PLC Dichroic Changer Overview



6.04 WHT PLC Dome Control System Overview



6.05 PLC Robodimm Dome Tower Overview

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6.06 Robodimm Telescope Limits Pico PLC Overview

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6.07 PLC Nitrogen Plant Overview

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Carlos Martin

Fecha de creación 05/12/2014 14:30:00

Page 12

Last Actualization

10/12/2014

7.00 Documentation

Robodimm Dome Tower PLC

<https://bscw.ing.iac.es/bscw/bscw.cgi/564486>

Dichroic Changer PLC for OASIS

<https://bscw.ing.iac.es/bscw/bscw.cgi/90782>

Laser Safety System PLC

https://bscw.ing.iac.es/bscw/bscw.cgi/99447#A99447_100603

Oil Recirculation Plant PLC

<https://bscw.ing.iac.es/bscw/bscw.cgi/261715>

Liquid Nitrogen Plant PLC

<https://bscw.ing.iac.es/bscw/bscw.cgi/246520>

Dome PLC1 Control Room & Dome PLC2 Dome

<https://bscw.ing.iac.es/bscw/bscw.cgi/212092>