Interface Control Document

Telescope M3CS Subsystem HCD

THIRTY METER TELESCOPE

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Telescope M3CS Subsystem HCD

The HCD is responsible for converting commands and demands from the M3A assembly into the appropriate google protocol buffer encoded messages and then transporting the data over 0MQ to and from the M3CS. It also converts information received from the M3CS into CSW compliant messages. All commands to the M3CS have a command response. The M3 assembly is the only expected client for the HCD.

Subsyatem	Name	Prefix	Type	WBS ID
TCS	M3HCD	TCS.TC.M3H	HCD	TCS.TC.M3H

Commands for M3HCD

TCS M3CS commands.

Configuration: Initialize

Requirements:

Ask M3CS to initialize

Arguments:

n/a

Configuration: Reboot

Requirements:

Ask M3CS to reboot

Arguments:

n/a

Configuration: Shutdown

Requirements:

Ask M3CS to shutdown

Arguments:

n/a

Configuration: AxisOn

Requirements:

This command turns drive power on for one or more axes.

Arguments:

Name	Description	Type	Required
axes	This is the axes for which we want to turn Drive On.	enum: (TILT, ROTATION, BOTH)	yes

Configuration: AxisOff

Requirements:

This command turns drive power off for one or more axes..

Arguments:

Name	Description	Type	Required
axes	This is the axes for which we want Bearing Sweep Operation to be performed	enum: (TILT, ROTATION, BOTH)	yes

Configuration: BearingSweep

Requirements:

This command in sweep through each axis full range of motion to distribute lubricant in the bearing.

Arguments:

Name	Description	Type	Units	Required
axes	This is the axes for which we want Bearing Sweep Operation to be performed	enum: (TILT, ROTATION, BOTH)		no
rotation	This is the rotation angle for Bearing Sweep operation. Its value can be in range ±181 which is TBC	double	deg	no
tilt	This is the tilt angle for Bearing Sweep operation. Its value range is TBD.	double	deg	no

Configuration: cancelProcessing

Requirements:

This command will help in cancelling a command which is currently being processed and mark update assembly so that it will be ready to accept a new command

Arguments:

n/a

Configuration: datum

Requirements:

This command will datum the encoders for the specified axis

Arguments:

Name	Description	Type	Required
axes	This is the axes for which needs to be datumed	enum: (TILT, ROTATION, BOTH)	yes

Configuration: LockPosition

Requirements:

This command will Move M3 to the requested lock positions

Arguments:

Name	Description	Type	Units	Required
operation	This parameter will help in locking and Unlocking.	enum: (On, Off)		yes
axes	This is the axes which we want to lock or unlock.	enum: (TILT, ROTATION, BOTH)		yes
rotation	This is rotation angle to which operator wants M3 to lock to. Its value can be 0°, 90°, 180° or 270°.	double	deg	yes
tilt	This is tilt angle to which operator wants M3 to lock to. Its value can be 45°	double	deg	yes

Configuration: PointDemand

Requirements:

This command will be used to move M3 to the desired Rotation and Tilt angle.

Arguments:

Name	Description	Type	Units	Required
operation	This will be used to move M3 to specific Rotation and Tilt angle.	enum: (On, Off)		yes
rotation	This is the rotation angle at which M3 needs to be moved.	double	deg	yes
tilt	This is the tilt angle at which M3 needs to be moved.	double	deg	yes

Configuration: Follow

Requirements:

This command will be used to move M3 to the desired Rotation and Tilt angle.

Arguments:

n/a

Configuration: Point

Requirements:

This command will be used to move M3 to the desired Rotation and Tilt angle.

Arguments:

Name	Description	Type	Units	Required
operation	This will be used to move M3 to specific Rotation and Tilt angle.	enum: (On, Off)		yes
rotation	This is the rotation angle at which M3 needs to be moved.	double	deg	yes
tilt	This is the tilt angle at which M3 needs to be moved.	double	deg	yes

Configuration: ReadConfiguration

Requirements:

This command shall be used to read active in memory configuration of M3. This command is effective only if M3 is in running state else the configuration is rejected.

Arguments:

n/a

Configuration: ServoOff

Requirements:

This command will turn the servo off for the requested axis. If the configuration is accepted HCD will send Servo off command to M3 for the requested axis. The configuration is rejected if M3 is not in running state.

Arguments:

Name	Description	Type	Required
axes	This is the axes for which the command needs to be executed.	enum: (TILT, ROTATION, BOTH)	yes

Configuration: StartLogging

Requirements:

This command will help in starting diagnostic event data publishing.

Arguments:

n/a

Configuration: StopLogging

Requirements:

This command will help in stopping diagnostic event data publishing.

Arguments:

n/a

Configurations Sent to Other Components

Name	Component	Subsystem
Initialize	M3S.M3S	M3S
Reboot	M3S.M3S	M3S
ShutDown	M3S.M3S	M3S
AxisOn	M3S.M3S	M3S
AxisOff	M3S.M3S	M3S
BearingSweep	M3S.M3S	M3S
Datum	M3S.M3S	M3S
CancelProcessing	M3S.M3S	M3S
ReadConfiguration	M3S.M3S	M3S
LockPosition	M3S.M3S	M3S
Follow	M3S.M3S	M3S
Point	M3S.M3S	M3S
PointDemand	M3S.M3S	M3S
ServoOff	M3S.M3S	M3S
StartLogging	M3S.M3S	M3S
StopLogging	M3S.M3S	M3S