MoonStalker messages

Introduction

This document describes the messages being exchanged between the Android Control and the Arduino based Drive unit.

< - start message delimiter

> - end message delimiter

All messages exchanged must start with the start message delimiter and end with the end message delimiter, e.g. <BTRY?> to query the battery voltage. Carriage return '\r' and newline '\n' can be sent, but will be ignored and removed from the text stream. All text is ASCII encoded.

Android Control is the initiator of messages and Arduino Drive unit responds to the messages to acknowledge receipt and provide responses. The only exception are the error, warning and info messages, which can be sent to the Android Control unit unsolicited.

Control messages

Move

<MV a b s>

a - horizontal steps

b - vertical steps

s – maximum speed of the stepper in RPM

Move the telescope in horizontal and vertical direction. While RDY message is not returned from Arduino, all move actions made by MoonStalker are blocked. The maximum speed for the stepper motors is specified with s, e.g. 500 RPM.

Example:

<MV 1000 200 500>

Moves 1000 steps in horizontal and 200 steps in vertical. Horizontal will move with 500 RPM, vertical will move with 100 RPM, because it needs to execute five times less steps.

Response:

<NOT_RDY> - Drive unit is still executing the previous movement

<MV_ACK a b s> - Start movement with the specified parameters

Move start

<MVS d s>

d - direction (N, S, W, E, NW, NE, SW, SE)

s – speed in RPM, both horiz and vertical steppers move with this speed

Start moving the telescope in the specific direction. It keeps moving until MVE message is received or ERROR happens. Speed s is specified in RPM of the stepper motor.

Example:

<MVS NW 500>

Starts moving both horizontal and vertical stepper to move the telescope in NW direction (up and to the right), both steppers rotate with 500 RPM.

Response:

<NOT_RDY> - Drive unit is still executing the previous movement

<MVS_ACK d s> - Start movement with the specified parameters

Move end

<MVE>

Stop moving the telescope after started when MVS was received.

Response:

<NOT_RDY> - Drive unit is not currently executing MVS started movement

<MVE_ACK> - Stopping previously started MVS movement

Status messages

Status

<MVST?>

Get move status of the telescope, whether the telescope is still moving or if it is ready to accept new move command.

Response:

<RDY> - Drive unit is ready to accept new move command

<NOT_RDY> - Drive unit is still executing the previous move command and is not ready yet to accept new move commands

Battery

<BTRY?>

Request to Arduino to return the battery voltage in mV.

Response:

<BTRY voltage>

voltage - value of the current voltage of Telescope battery in millivolts.

Reply from Arduino give information of current voltage of telescope battery.

Error Messages

Error messages can be sent to the Android Control unit unsolicited.

<ERROR error_msg>

When something unexpected happens on telescope, the reason for error is returned from Arduino.

ERROR MESSAGE	MEANING
END_LIMIT_SW_TRIG	End limit switch has been triggered

Warning messages

Warning messages can be sent to the Android Control unit unsolicited.

<WARNING warning_msg>

WARNING MESSAGE	MEANING
BTRY_LOW	Battery voltage is low

Info messages

Info messages can be sent to the Android Control unit unsolicited.

Info messages can be anything and are only meant for logging purposes. The Control unit is not meant to execute any actions upon receiving them.

<INFO info_msg>