

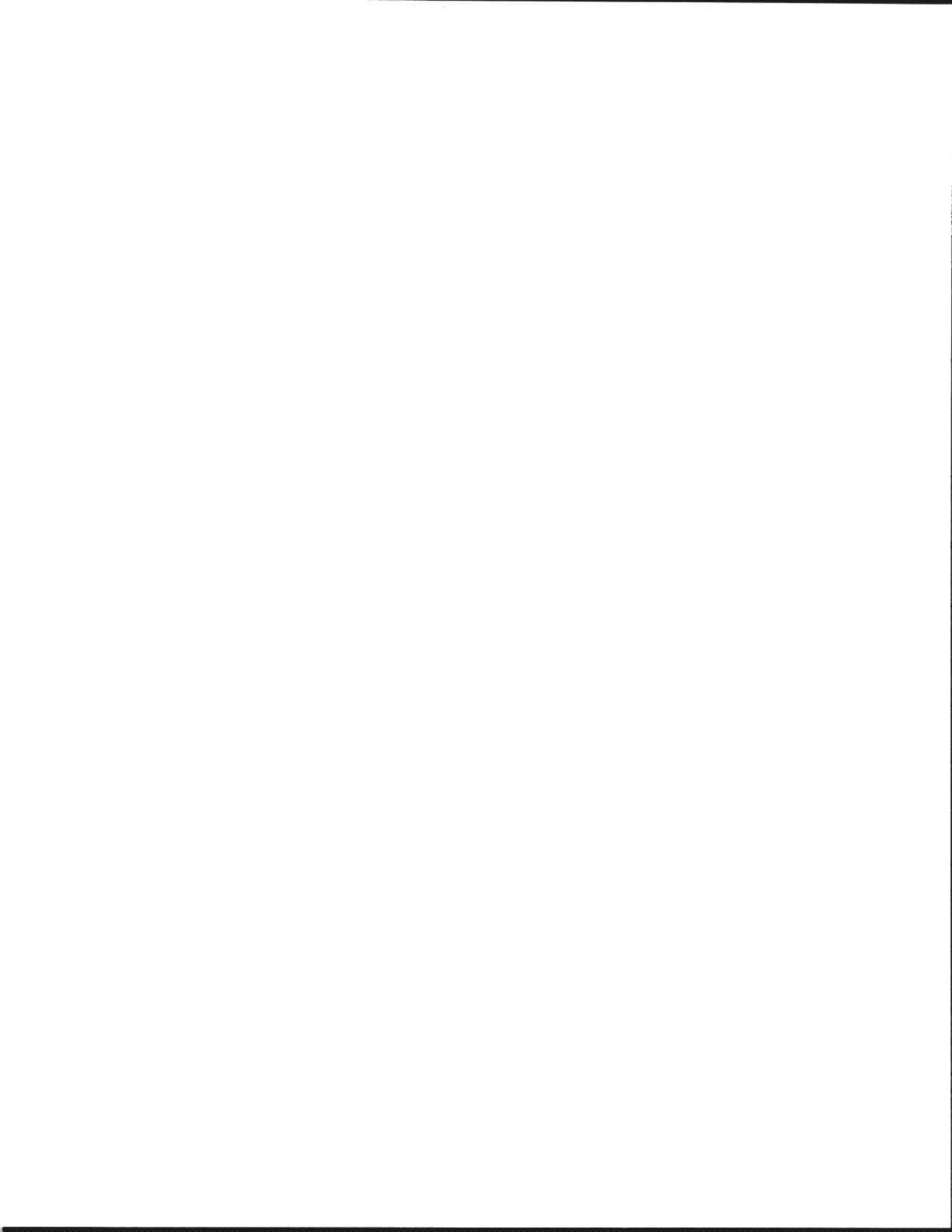
MMTO Technical Report Number 8B

MMT Mount Control Program

Marc Chamberlin

Bobby Ulich

May 1982



## Table of Contents

1.0	Booting Up the Mount Configuration .....	3
1.1	Changing the Date .....	5
	Sample Tracker Status Display .....	6
2.0	Moving the Telescope .....	7
2.1	Halting and Resuming the Motion of the Mount .....	7
2.2	Stowing the Telescope .....	8
2.3	Moving to a Fixed Position .....	9
2.4	Celestial Pointing and Tracking .....	10
2.5	Nudging the Telescope .....	13
2.6	Instrument Rotator .....	13
3.0	The Paddle .....	16
3.1	Setting the Coordinate Frame for Paddle Motion .....	16
3.2	Setting the Paddle Rates .....	16
4.0	Offsets .....	18
4.1	Zeroing the Offsets .....	19
4.2	Collimation Corrections .....	19
4.3	Understanding Apparent, True, and Instrument Coordinates .....	21
5.0	Miscellany .....	24
5.1	Setting DUT1 .....	24
5.2	Setting the Refraction Coefficient.....	24
5.3	Airmass and Horizon .....	25
5.4	Change of Date During Observing .....	26
5.5	Setting the Year .....	26
5.6	Halting and resuming the mount software ..	27
5.7	Forcing an update of the Status Display ..	27
5.8	Obtaining a Copy of the Status Display ...	28
5.9	Logging Comments .....	28
6.0	Recovering from Errors .....	30

6.1	Diagnostics .....	31
7.0	Planetary Tracking .....	33
7.1	Entering Coordinates .....	35
7.2	Horizontal Parallax Correction .....	36
8.0	Satellite Tracking .....	38
8.1	Entering Coordinates .....	38
8.2	Updating Coordinates .....	39
9.0	IR Photometer Software .....	40
10.0	Source Catalog Maintenance .....	42
10.1	Starting a New Catalog .....	42
10.2	Deleting Sources from the Catalog .....	42
10.3	Entering Sources into the Catalog .....	43
10.4	Updating Information for a Catalog Entry .....	45
10.5	Examining Catalog Entries .....	45
10.6	Examining Entries for Pointing .....	46
10.7	Segregated Catalogs .....	49
11.0	Alphabetical Listing of Commands and their Formats .....	51

## 1.0 Booting Up the Mount Configuration

To bring up the MMT Super-FORTH system, first make sure the appropriate console terminal which you wish to use has been selected. This is done with a toggle switch located above the mount computer. Then place the appropriate diskette in drive 0, press STOP then APL on the Point 4 computer and type

P33

on the console terminal to bring up the Super-FORTH operating system.

After the Point 4 reads diskette blocks for a few seconds, the operator ADM-3 control terminal will show the Super-FORTH Banner, give an indication that you are running the version which supports the Mount Computer Peripheral Configuration, today's date, and a message block which contains information of concern to the operator.

After this the terminal will issue the message "ok", at which time the computer is ready to respond to system commands. Now type

TRACK

This commands the computer to begin compiling the mount control software stored on the system diskette. After about 30 seconds, the TTY should burp, and the Lexiscope screen at the operator console should be refreshing and come to life with the mount status information.

When the mount control software initially wakes up it places the mount into a halted condition at wherever the mount happens to be situated. If the

mount is moving...something is WRONG!!!

If you are about to switch the drives on, or are switching from manual mode to computer mode, don't be surprised if the mount moves just a bit, but the mount should settle down after a few seconds.

When the program comes to life, the status monitor will display all the values of temperature, pressure, offsets, collimation errors, and paddle modes and rates which were present at the last use of the program. This feature is useful in that, if the program should crash during an observing run, you need not re-enter all the parameters which you did upon a cold start. However, the setup can be fully logged on the TTY printer to aid in your reconstruction efforts. An example of the status monitor display is shown on page 6. The various parts of the display will be explained in the following text.

If, for some reason, you should want to force the status display screen to refresh, use the "GO" command. This is precisely what the mount control program does at start-up, and you may also do this at your own discretion.

All commands given to the computer must be terminated by a carriage return. This will be implicitly assumed in what follows in this manual. Upper and lower case letters may be intermixed in any fashion with Super-FORTH so that acceptable commands may appear as:

```
4 SEEK
4 seEK
4 seek      etc....
```

In this manual, operator commands will be shown as capitals, and (sometimes) will be enclosed in quotes.

The mount computer is configured so that the operator commands are entered on the ADM-3 terminal keyboard. Computer-to-operator communications take place by means of the ADM-3 video screen. The Lexiscope screen is used during tracking to display the mount status, and a Teletype Model 43 printer is used to perform mount command logging. The printer keyboard is dead to the world so nothing typed on it will be accepted into the computer.

### 1.1 Changing the Date

If today's date, shown on the Lexiscope Screen is incorrect, you may change it after receiving the final "ok" from Super-FORTH. Simply type in the correct date and a 3-letter month abbreviation followed by "EPOCH", e.g.,

28 Jul EPOCH

The acceptable month abbreviations (in either upper, lower, or mixed cases) are:

Jan	Feb	Mar	Apr	May	Jun
Jul	Aug	Sep	Oct	Nov	Dec

The current setting of the date is always displayed on the lexiscope screen.

SOURCE	MAG	2 JUN	UTC	DUT	SID TIME	HORIZON
ALPHA TAU	1.1 K5	1982	0:00:16	-0.328	9:17:15	-3:40

STAR #	PADBLE SLOW	FAST	AIRMASS
62	AZ/EL 1.0	10 */SEC	0.000

	AZ	EL	1950	R.A.	DEC
ENCODER	358:50:23.1	-179:31:25.7	1950	23:58:21.86	-0:10:39.9
ERROR	0:00:00.0	0:00:00.0	CURRENT	4:34:53.34	16:28:22.6
VELOCITY	717:40:46.3	-359:02:51.4	OFFSET	0.0	0.0
MODE	INT/TRACK	INT/TRACK	ACTUAL	0:00:00.00	0:00:00.0
TRUE	358:50:23.1	180:28:34.3	H.A.	9:17:15.60	
INSTRUMENT	358:50:23.1	-179:31:25.7	P.A.	-46:33:35.2	
CORRECTION	-16.0	25.2	SKY-PA	0.0	FTEMP 55
REFRACTION		-632.7	MAX-PA	180.0	PTORR 555
COLLINATION	0.0	0.0	ROT-PA	-46.5	REFCO 42.1
OFFSET	0.0	0.0	MIN-PA	-180.0	
			ZERO-PA	0.0	RADERR 0.0