



## MULTIPLE MIRROR TELESCOPE OBSERVATORY

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Subject: Abridged I-Ret Software Guide

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The purpose of this memorandum is to provide an abridged guide to the intensified Reticon (I-Ret) detector control software for the infrequent user. It is intended especially for all on the MMTO staff--day crew, instrument specialists, engineers, technicians, and telescope operators--who have the occasional need to start or stop exposures, store observers' data, or perform other simple tasks, but it can also serve as a "cookbook" for the observer who simply wants to gather and record data during his/her observing run.

The instrument computer is used to control the I-Ret detectors on both the MMT spectrograph and the MMT echelle. Each I-Ret has two parallel light-sensitive diode arrays adjacent to one another which record the spectrum of the object. The computer controls the acquisition and storage of spectroscopic data and has simple on-line and extensive off-line data analysis capabilities. The programs and associated overlays, representing several man-years of effort, are written in SAO FORTH. Complete software source code listings are available at the MMT. The on-line software is documented in the I-Ret software manual written by Bill Wyatt, and this manual is resident at several Tucson and Mt. Hopkins locations. SAO is responsible for incorporating changes in the control programs, and at irregular intervals Bill Wyatt will release new I-Ret control software and the appropriate updates to the software manual.

Data reduction and analysis packages are also available on the instrument computer, but except for the relatively simple routines described in the I-Ret

software manual, these programs must be used separately from the control software by booting the instrument computer with the floppy disc labeled "Data analysis boot disk". This software is described in the manual entitled "Z-machine software" written by John Tonry, and updates are incorporated at irregular intervals by Bill Wyatt, who also issues the appropriate documentation.

### 1. The Lexiscope Screen

In the normal operating mode, the top 3 lines of the instrument computer monitor (sometimes called the "Lexiscope") display information relevant to the detector status. Figure 1 is a copy of a typical Lexiscope header. Commands and responses use all of the screen except for these three lines which cannot be accessed in normal operation.

Object - INCANDS	0	Date - 02/14/83	Int. Time - 00:19:54	
Left -	0	MST - 00:20:11	Status - INTEGRATE	
Right -	0	S.T. - 00:20:15	Time left - Forever!	4K

Figure 1: The Lexiscope Header

The word following the header "Object" displays the user-defined name for the current exposure. This is the name which appears next to the appropriate file number in the I-Ret log book which is kept by the observer for every exposure taken at the MMT. A flashing letter "C" will appear next to the object name if no comment header has been entered for the current exposure by the user. The number to the right of the object name (which appears as 0 in Figure 1) is the number of the Trident directory onto which the present exposure is stored when terminated. (See section 2).

The numbers which follow the "Left" and "Right" labels indicate the total amount of light striking each of the two detector arrays in a given time interval. In normal operation, this interval is one second so these numbers will change every second when the detector is integrating.

The center three rows in the Lexiscope display shown in Figure 1 contain the current mountain standard date (Date), the mountain standard time (MST), and the local sidereal time (S.T.).

The right three rows give the integration time ("Int. Time") which is the elapsed time since the start of the current integration, the status ("Status") which indicates either "HALT" if no integration is in progress, or "INTEGRATE" if one is, and the "Time left" which gives the time remaining in the present exposure. If no exposure length has been entered by the observer, the "Time left" will be given as "Forever!", and the integration will continue indefinitely. An "\*" appears after the "Time left" number if the data are to be automatically stored at the end of the integration. Finally, the symbol "4K" or "8K" appears to the right of the "Time left" field depending upon whether the observer has selected 1/2 or 1/4 diode resolution for data storage.

## 2. Selecting the Data Storage Medium

### a) Recording data on the Trident

The data are automatically stored on the current Trident disc pack in the directory labelled DATADIR. Each directory has room for 31 data files, and a log sheet should be filled out by the observer for each exposure in the blue binder in the control room labelled "I-Ret data log book".

When the instrument computer is rebooted, the Lexiscope screen will prompt the user how to set the various start-up parameters. To prepare the Trident to access old data or to record new data, type

# TLINK <cr> (1)