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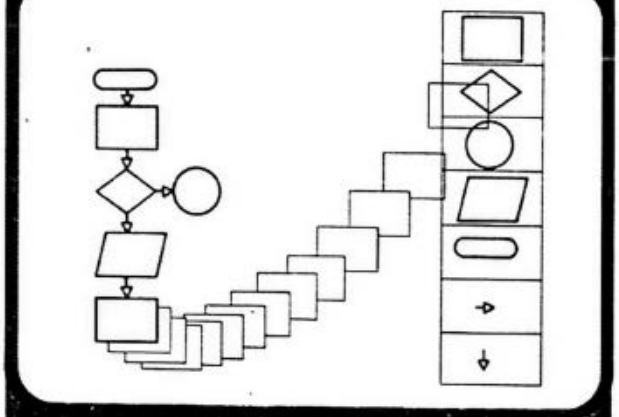

4054

OPTION 30
DYNAMIC GRAPHICS

OPTION 31
COLOR ENHANCED DYNAMIC GRAPHICS

REFERENCE GUIDE

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This reference guide provides quick information for programming and/or operating the 4054 Graphic Computing System with Options 30 and 31. It assumes that you have already read the Dynamic Graphics Operator's Manual. The guide contains brief descriptions of the Option 30/31 commands, organized in a summary list.

Many commands used with these options are general 4054 commands and are not covered in this guide (e.g., RDRAW, RMOVE, POINTER, etc.). For more information about such commands, see your 4050 Series Graphic System Reference Manual or 4050 Series BASIC Reference Guide.

The following command list provides:

- command name and syntax,
- an example,
- explanation of example,
- range of arguments, where applicable,
- default values for optional arguments,
- whether the command/function may be assigned to variables,
- whether the command operates only in BASIC program run (vs. immediate) mode. All commands operate in both modes unless otherwise indicated.

The last frame of this guide lists system objects with object numbers and definitions.

BLINK object number, on time, off time

```
BLI 1,Ø.5,Ø.2
```

Blinks object 1 on (visible) for 0.5 seconds and off (invisible) for 0.2 seconds, repeatedly.

The minimum on/off time is 0.03 seconds. You may use variables for on/off times.

BRIGHTNESS display intensity code

```
BRI Ø
```

Sets the brightness of all subsequent object vectors to normal and defocused.

Code	Intensity	Focus	Affected Displays
0	Normal	Defocused	Refreshed/Stored
1	Normal	Focused	Refreshed/Stored
2	Bright	Defocused	Stored only
3	Bright	Focused	Stored only

CURSOR object number

```
CUR 1
```

Causes object 1 to become the graphic cursor displayed by the POINTER statement. Cursor position is controlled by the thumbwheels or optional joystick. (Replaces the standard crosshair cursor.)

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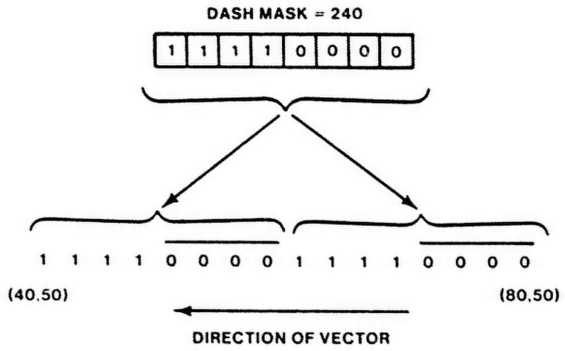
DASH dash mask

DAS 240

Sets the dash pattern for displayed vectors. This decimal value 240 is converted to binary ($240_{10} = 11110000_2$), and this binary number determines the dash pattern, as shown below.



Here are some other common dash patterns with corresponding dash masks.

Pattern	Dash Mask Number	Binary Equivalent
———	3	00000011
— — — —	170	10101010
— — — —	85	01010101
——	15	00001111
(no vector is drawn)	255	11111111
— ——	200	11001000

If the mask is greater than 255, 256 is subtracted from the mask until it is between 0 and 255.

The default value for the dash mask is 0 (solid vectors), and is reset to 0 by RINIT command.

FIX object number

FIX 3

Stores object 3 at its present location on the screen. Object 3 is still displayed in refresh at the same location.

RAPPEND object number

RAP 3

Appends information to object 3. All vectors and alphanumerics between this RAPPEND and the next RCLOSE are included in object 3.

RAPPEND operates only in BASIC program mode.

RCLOSE

RCL

Closes (completes) the object being defined. The object number is given in the corresponding ROPEN or RAPPEND statement.

An ROPEN, RAPPEND, END, STOP, and BREAK do an implied RCLOSE if an object is open.

RDELETE object number

RDE 2

Deletes object 2 from Dynamic Graphics memory.

RINIT

RIN

Deletes all user-defined objects from Dynamic Graphics memory and redefines the system objects to their defaults. (See the SYSTEM OBJECTS list.)

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[numeric variable=] RMEMORY

RME

Returns the number of bytes of available (unused) Dynamic Graphics memory.

May be assigned to a variable, sending this information to the program.

```
A=RME
IF A>1000 THEN 170
```

If 1000 bytes of memory are available, go to line 170.

ROPEN object number

ROP 1

Opens object 1 file. Subsequent vectors and/or text strings until RCLOSE become "object 1." ROP 1 deletes any existing definition of object 1.

Construction of object must occur in BASIC program mode, not immediate mode.

Allowed object numbers:

- user-defined — 1 through 65531
- system objects — 0 and 65532 through 65535

(see object list in back of card)

RREPLACE first object number, second object number

RRE 1,2

Object 1 is deleted and object 2 becomes the new object 1. Original object 1's display parameters (blink rate, brightness, etc.) remain intact.

[numeric variable=] RSPACE

RSP

Returns (displays) the number of bytes of occupied Dynamic Graphics memory space.

May be assigned to a variable, sending this information to the program.

```
100 B=RSP
110 IF B=32768 THEN 530
530 PRINT "DYNAMIC MEMORY FULL"
```

STPOINT object number, X location, Y location

STP 1,10,20

Positions starting point of object 1 to a new screen location 10, 20 UDUs*, thus moving entire object.

*UDU — user defined unit

VISIBILITY object number, display argument

VIS 3,0

Object 3 is no longer visible on the screen.

When the display argument is non-zero, the object will be visible (in refresh).

0 — invisible

non-0 — displayed but not stored.

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SYSTEM OBJECTS

The following objects are built by the system at each power-up or RINIT. Accessible characters may be redefined by user.

Object 0 — Standard crosshair cursor. Not accessible to the user.

Object 65532 — Input prompt (blinking '?'). Accessible.

Object 65533 — 'Full Page' message. Accessible.

Object 65534 — Blinking alpha cursor. Accessible.

Object 65535 — Prints refresh character (used by PRI @ 32,24:). Not accessible.

ERROR MESSAGE

```
ROP@ 3
SYSTEM ERROR IN IMMEDIATE LINE -
     MESSAGE NUMBER 88
```

Prompted by reference to an illegal object number (such as a decimal number).

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Command	I/O Address
BLINK	32,8:
BRIGHTNESS	32,30:
CURSOR	32,6:
DASH	32,31:
FIX	32,5:
RAPPEND	32,4:
RCLOSE	32,2:
RDELETE	32,7:
RINIT	32,29:
RMEMORY	none
ROPEN	32,3:
RREPLACE	32,0:
RSPACE	none
STPOINT	32,16:
VISIBILITY	32,1:

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