digital

EK-0GIGI-RC-001

GIGI PROGRAMMING REFERENCE CARD

ReGIS SUMMARY

To program functions listed in the right column, you must send the characters shown in bold and color in the left column. For example, to program a Red background on the screen first press **S(I(R))**. All commands must be preceded by a basic command (**S**creen, **W**rite, **P**ositions, etc.) followed by one or more modifiers for that command.

Screen

Command	Function
d . . .	Screen scroll offset, quantified to [12,8]
[x,y]	Move this address to upper left corner
[dx,dy]	Scroll screen by this amount
(**W**)	Writing controls
(**E**rase)	Clear data and set foreground color
(**A**ddressing [x1,y1] [x2,y2])	Compatibility with other ReGIS devices
(**A**ddressing)	Restore native addressing
(**N**egate **1**)	Reverse video
(**N**egate **0**)	Restore video to normal mode
(**T**ime nnn)	In 60ths (PF0) or 50ths (PF1) of a second
(**H**ardcopy [,Y1] [,Y2])	Print hardcopy between Y coordinates
(**I**ntensity	Screen background intensity/color
0 to **7**)	Dark to bright
(**D**))	Dark
(**B**lue))	
(**R**ed))	
(**M**agenta))	Red and blue
(**G**reen))	
(**C**yan))	Green and blue
(**Y**ellow))	Red and green
(**W**hite))	Red, green and blue
(**H**ue	
0 to **360**))	Angle on color wheel
(**L**ightness	
0 to **100**))	Percentage
(**S**aturation	
0 to **100**))	Percentage

Write

Command	Function
(Intensity	Writing intensity/color
. . .	Null; change no colors
0 to 7	Dark to bright
(D))	Dark
(Blue))	
(Red))	
(Magenta))	Red and blue
(Green))	
(Cyan))	Green and blue
(Yellow))	Red and green
(White))	Red, green and blue
(Hue	
0 to 100))	Angle on color wheel
(Lightness	
0 to 100))	Percentage
(Saturation	
0 to 100))	Percentage
(Alternate	
1)	Flashing on
0)	Flashing off
(Shade from [,Y])	Set shading axis
(Shade with "**c**")	Set shading character
(Shade	
1)	Shade on, line pattern shading
0)	Shade off
(Multiplier nnn)	Pixels per offset vector
(Negate	
1)	Negative writing (invert pattern bits)
0)	Positive writing
(Complement)	Exclusive OR pattern with bit map
(oVerlay)	Logical OR pattern with bit map
(Erase)	Write "Negate" setting
(Replace)	Replace, ignore bit map data
(Pattern	
bbbbb)	Binary bit pattern, fills to 8 places
(Md))	Multiply each bit pattern
1)	Solid line
p)	Digits 2-9 specify standard patterns

Position

Command	Function
[X,Y]	Absolute position
[dx,dy]	Relative position
d . . .	"d" is offset vector 0-7
(W)	Temporary write controls
(Begin)	Begin position sequence – save position (up to 7 levels)
(End)	End and restore starting position

Vector

Command	Function
[ ]	Write point at current cursor position
[X,Y]	Absolute position
[dx,dy]	Relative position
d . . .	"d" is offset vector 0-7
(W. . .)	Temporary write controls
(Begin)	Begin closed polygon sequence
(End)	Draw to starting position

Curve

Command	Function
[X,Y]	Absolute coordinates
[dx,dy]	Relative coordinates
d . . .	Offset vector 0-7
(Begin)	Begin closed curve
(Start)	Start open curve
(End)	End curve
(W. . .)	Temporary writing controls

Circle

Command	Function
[X,Y]	Absolute coordinates
[dx,dy]	Relative coordinates
d . . .	Offset vector 0-7
(Circumference)	Position is on circumference
(Angle d)	d = degrees resolution, signed
(W. . .)	Temporary writing controls

Text

Command	Function
'string'	Display 'string' (includes BS, CR, LF, TAB)
''string''	Display 'string' (includes BS, CR, LF, TAB)
d . . .	Offset text line by ½ character space, d is 0-7
[dx,dy]	Set spacing between characters
(Alphabet 0 to 3)	Select character set 0 – 3
(Begin)	Begin temporary text attributes (saves one level)
(Direction d)	d = 45° resolution, signed
(End)	Restore permanent text attributes
(Height 0 to 16)	Height times base character size (affects S [r,c]
(Italic + degrees)	Right slant, number degrees
(Italic − degrees)	Left slant, number degrees
(Italic **0**)	No slant
(Multiplier [r,c])	Number of times to repeat bits in character ([1,2] used for standard size)
(Size [r,c])	Dimensions of character area, ([9,20] is standard size)
(Size 0 to 16)	Select one of 17 predefined character sizes
(W. . .)	Temporary writing controls

Load

Command	Function
(Alphabet 1 to 3 'name')	Select character set 1 – 3 1 – 10 character name for character set [see R(L)]
''**c**'' <10 hex pairs>	Load specific letter with pattern
'**c**' <10 hex pairs>	Load specific letter with pattern

Report

Command	Function
(Loaded)	Currently loaded character set name
(Macrographs (letter , . . .))	Report contents of macrograph "letter"
(=))	Report macrograph space usage
(Position)	Current position
(Interactive))	Enter locator mode (same as pressing SHIFT/PF2)
[+dx,+dy]))	Arrow increments

Other Functions

Command	Function
@ letter	Invoke macrograph "letter"
@ :letter . . . @;	Load macrograph "letter"
@ .	Clear all macrographs
;	Resynchronization character

Offset vector:

3	2	1
4	–	0
5	6	7

To initialize ReGIS: ;S (I0N0A)W(VI7A0S0M1N0P1M2)T(I0A0D0S1) P[0,0]

ANSI CONTROL FUNCTIONS SUMMARY

Cursor Movement Commands

Function	Command
Cursor Up	ESC [Pn A*
Cursor Down	ESC [Pn B*
Cursor Forward (Right)	ESC [Pn C*
Cursor Backward (Left)	ESC [Pn D*
Direct Cursor Addressing	ESC [Pl ; Pc H†
	ESC [Pl ; Pc f
Index	ESC D
New Line	ESC E
Reverse Index	ESC M
Save Cursor and Attributes	ESC 7
Restore Cursor and Attributes	ESC 8

* Pn represents a decimal parameter expressed as a string of ASCII digits. Multiple parameters are separated by the semicolon character (073_8). If a parameter is omitted or specified as 0, the default parameter value is used. For cursor movement commands, the default parameter value is 1.

† Pl = line number; Pc = column number.

Character Attributes

ESC [Ps ; Ps; Ps ; . . .; Ps m

	Parameter	Function
Ps =	0 or None	All attributes off
	2	Half bright (or green)
	4	Underscore on
	5	Blink on
	7	Reverse video on
	30	Black writing color
	31	Red writing color
	32	Green writing color
	33	Yellow writing color
	34	Blue writing color
	35	Magenta writing color
	36	Cyan writing color
	37	White writing color
	40	Black screen color
	41	Red screen color
	42	Green screen color
	43	Yellow screen color
	44	Blue screen color
	45	Magenta screen color
	46	Cyan screen color
	47	White screen color

Multiple parameters are separated by the semicolon character (073_8). The parameters are executed in order. Ignore other parameters.

Erasing

Function	Command
From Cursor to End of Line	ESC [K or ESC [0 K
From Beginning of Line to Cursor	ESC [1 K
Entire Line Containing Cursor	ESC [2 K
From Cursor to End of Screen	ESC [J or ESC [0 J
From Beginning of Screen to Cursor	ESC [1 J
Entire Screen	ESC [2 J

Programmable LEDs

ESC [Ps ; Ps ; . . .Ps q

	Parameter	Function
Ps =	0 or None	All LEDs off
	1	LED 1 on
	2	LED 2 on

Multiple parameters are separated by the semicolon character (073_8). The parameters are executed in order.

Select Character Sets (G0 and G1)

Character Set	G0	G1
UK	ESC (A	ESC) A
US ASCII	ESC (B	ESC) B
Soft Set 1	ESC (0	ESC) 0
Soft Set 2	ESC (1	ESC) 1
Soft Set 3	ESC (2	ESC) 2

Enter Graphic Mode

Command	Function
ESC P p	Enter and remain in graphic mode until next ESCape sequence.
Linefeed (LF) !	Enter and remain in graphic mode until next Linefeed character, if GP1 is selected.

Modes

SET-UP parameters are affected by these modes.

TO SET MODES

SET-UP Para	Name	Mode	Sequence
NL	Linefeed/ New line	New line	ESC [20 h
CK	Cursor key	Application	ESC [? 1 h
TM	ANSI/VT52	ANSI	N/A
SM	Scrolling	Smooth	ESC [? 4 h
RV	Screen	Reverse	ESC [? 5 h
AW	Wraparound	On	ESC [? 7 h
AR	Autorepeat	On	ESC [? 8 h
OS	Overstrike	On	ESC [? 20 h
BA	Local BASIC	Local	ESC [? 21 h
BA	Host BASIC	Host	ESC [? 22 h
PK	Programmed Keypad	Programmed	ESC [? 23 h
AH	Auto hardcopy	On	ESC [? 24 h
KP	Keypad	Application	ESC =

TO RESET MODES

SET-UP Para	Name	Mode	Sequence
NL	Linefeed/ New line	Line feed	ESC [20 l*
CK	Cursor key	Cursor	ESC [? 1 l*
TM	ANSI/VT52	VT52	ESC [? 2 l*
SM	Scrolling	Jump	ESC [? 4 l*
RV	Screen	Normal	ESC [? 5 l*
AW	Wraparound	Off	ESC [? 7 l*
AR	Autorepeat	Off	ESC [? 8 l*
OS	Overstrike	Off	ESC [? 20 l*
BA	Local BASIC	BASIC off	ESC [? 21 l*
BA	Host BASIC	BASIC off	ESC [? 22 l*
PK	Programmed Keypad	Normal	ESC [? 23 l*
AH	Auto hardcopy	Off	ESC [? 24 l*
KP	Keypad	Numeric	ESC >

* Last character of sequence is lowercase L (154_8).

Reports

Cursor Position

Invoked by ESC [6 n
Response ESC [Pl ; Pc R

(Pl = line number; Pc = column number)

Status

Invoked by	ESC [5 n
Response	ESC [0 n (terminal ok)

What Are You

Invoked by	ESC [c or ESC [0 c
Response	ESC [? 5 ; 0 c or ESC [? 5 c (meaning: I am GIGI terminal)

Alternately invoked by ESC Z (not recommended). Response is the same.

Reset

Invoked by	ESC c (same as pressing SHIFT/PF4)

Reset causes the reset routine to be executed. The SET-UP parameters, BASIC program, and soft character sets are not destroyed.

Print Commands

Function	Command
Print display image	ESC # 7 (Same as pressing SHIFT/PF1.)
Print partial image	ESC [Pn ; Pn !q

Pn are numeric parameters that specify start and stop line numbers inclusive.

Confidence Tests

Generate cross hatch pattern on display	ESC # 8
Perform self tests	ESC [3 ; Pn ; Pn ; . . . y

Pn selects the test to be performed as follows

Pn	Test Selected
1	All power up tests
2	External communications test
3	Hardcopy communications test
4	Display pattern test
5	Color bar test
9	Repeat selected tests until failure

Device Control Strings

String	Command
ReGIS data to follow	ESC P p (host to terminal)
SET-UP data to follow	ESC P r (host to terminal)
Auxiliary keypad data to follow	ESC P key ID code s (host to term)
Hardcopy data to follow	ESC P q (terminal to printer)*
String terminator	ESC \

All device control strings must be terminated with a string terminator. For example:

ESC P r . . . SET-UP data . . . ESC \

* This string is issued by GIGI to LA34 Graphics Printer, GIGI does not process it.

VT52 CONTROL FUNCTION SUMMARY

Function	Command
Cursor up	ESC A
Cursor down	ESC B
Cursor right	ESC C
Cursor left	ESC D
Select soft character set 1	ESC F
Select ASCII character set	ESC G
Cursor to home	ESC H
Reverse line feed	ESC I
Erase to end of screen	ESC J
Erase to end of line	ESC K
Direct cursor address	ESC Y lc*
Identify	ESC Z†
Enter alternate keypad mode	ESC =
Exit alternate keypad mode	ESC >
Enter ANSI mode	ESC <
Dump hardcopy	ESC]
Enter graphics mode (ReGIS)	ESC P p
Exit graphics mode	ESC \

* l = line number, c = column number. Line and column numbers for direct cursor address are single character codes whose values are the desired number plus 37_8. Line and column numbers start at 1.

† The response to ESC Z is ESC / Z. This is not recommended. Use ESC [0 c in ANSI MODE.

AUXILIARY KEYPAD NUMERIC KEY CODES WHEN PK0 SET

Key	Key ID Code	Keypad Numeric Mode (KP0)	Keypad Application Mode (KP1) ANSI (TM1)	VT52 (TM0)
0	0	0	ESC O p	ESC ? p
1	1	1	ESC O q	ESC ? q
2	2	2	ESC O r	ESC ? r
3	3	3	ESC O s	ESC ? s
4	4	4	ESC O t	ESC ? t
5	5	5	ESC O u	ESC ? u
6	6	6	ESC O v	ESC ? v
7	7	7	ESC O w	ESC ? w
8	8	8	ESC O x	ESC ? x
9	9	9	ESC O y	ESC ? y
–	10	–	ESC O m	ESC ? m
,	11	,	ESC O l*	ESC ? l*
.	12	.	ESC O n	ESC ? n
ENTER	13	Same as RETURN	ESC O M	ESC ? M

* Last character of sequence is lowercase L (154_8).

AUXILIARY KEYPAD PF KEY CODES WHEN PK0 SET

Key	Key ID Code	ANSI (TM1)	VT52 (TM0)
PF1 [HARD COPY]	14	ESC O P	ESC ? P
PF2 [LOCTR]	15	ESC O Q	ESC ? Q
PF3 [TEXT]	16	ESC O R	ESC ? R
PF4 [RESET]	17	ESC O S	ESC ? S

CURSOR CONTROL KEY CODES WHEN PK0 SET

Cursor Key (arrow)	Key ID Code	VT52 Mode (TM0)	ANSI Mode (TM1) and Cursor Key Mode Reset (CK0)	ANSI Mode (TM1) and Cursor Key Mode Set (Application) (CK1)
Up	18	ESC A	ESC [A	ESC O A
Down	19	ESC B	ESC [B	ESC O B
Right	20	ESC C	ESC [C	ESC O C
Left	21	ESC D	ESC [D	ESC O D

TERMINAL SET-UP PARAMETERS AND MNEMONICS

Transmit speed	TS	Receive speed	RS
Line/local	LL	BASIC	BA
Parity enable	PE	XON/XOFF	XO
Scroll mode	SM	Reverse video	RV
Horizontal margins	HM	Vertical margins	VM
Expansion mode	EM	Horizontal position	HP
Overstrike	OS	Visual cursor	VC
Text display	TD	Graphics display	GD
Graphics prefix	GP	Single character	SC
Local echo	LE	New line	NL
Auto hardcopy	AH	Auto wraparound	AW
Key repeat	KR	Keyclick	KC
Margin bell	MB	Terminal mode	TM
Numeric keypad mode	KP	Cursor key mode	CK
Programmed keypad mode	PK	Tablet locator mode	TL
UK character set	UK	Comm. interface	CI
Hardcopy speed	HS	Power frequency	PF
Interlace	IL	Self test	ST

TERMINAL SUPPORTED CONTROL CHARACTER FUNCTIONS

Key Pressed with CTRL Key	Control Code	Action Taken
G	BEL	Ring terminal bell
H	BS	Backspace cursor by one position
I	HT	Horizontal tab (interpreted as a space without writing in ReGIS quoted string)
J	LF	Line feed
L	FF	Form feed; clear screen and home cursor
M	CR	Carriage return
N	SO	Shift out
O	SI	Shift in
Q	DC1 (XON)	Resume transmitting
S	DC3 (XOFF)	Stop transmitting
X	CAN	Cancel or abort escape sequence
Z	SUB	Same effect as CAN
[	ESC	Escape

BASIC COMMANDS/STATEMENTS

AUTO
CLEAR
CONT
CTRLC
CTRLO
RCTRLC
RCTRLO
DATA
DEF FN
DELETE
DIM
ECHO
NO ECHO
EDIT
END
ERASE
ERR
ERL
ERROR
FOR . . . NEXT
GOSUB . . . RETURN
GOTO
HOST
IF . . . THEN [. . . ELSE]
IF . . . GOTO
INPUT
LET
LINPUT
LIST
MID
NEW
OLD
ON ERROR GO TO
ON . . . GOSUB
ON . . . GOTO
OPTION BASE
PRINT
RANDOMIZE
READ
REM
RESTORE
RESUME
RUN
SAVE
STOP
SWAP
TRON/TROFF
WHILE . . . WEND
WIDTH

BASIC FUNCTIONS

ABS
ASC
ATN
CHR$
COS
EXP
FRE
GOFF$
GON$
HEX$
INKEY$
INSTR
INT
LEFT$
LEN
LOG
MID$
OCT$
POS
RIGHT$
RND
SGN
SIN
SPACES
SPC$
SQR
STR$
STRING$
TAB
TAN

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