GTE Register Specification

July 19, 1996

Version 1.0

Sony Computer Entertainment Inc.

Control registers

Register number	Name	Access	Content
0	**R11R12**	**R/W**	Rotation matrix
1	**R13R21**	**R/W**	Rotation matrix
2	**R22R23**	**R/W**	Rotation matrix
3	**R31R32**	**R/W**	Rotation matrix
4	**R33**	**R/W**	Rotation matrix
5	**TRX**	**R/W**	Translation vector (X)
6	**TRY**	**R/W**	Translation vector (Y)
7	**TRZ**	**R/W**	Translation vector (Z)
8	**L11L12**	**R/W**	Light source direction vector X 3
9	**L13L21**	**R/W**	Light source direction vector X 3
10	**L22L23**	**R/W**	Light source direction vector X 3
11	**L31L32**	**R/W**	Light source direction vector X 3
12	**L33**	**R/W**	Light source direction vector X 3
13	**RBK**	**R/W**	Peripheral color (background color) (R)
14	**GBK**	**R/W**	Peripheral color (background color) (G)
15	**BBK**	**R/W**	Peripheral color (background color) (B)
16	**LR1LR2**	**R/W**	Light source color X 3
17	**LR3LG1**	**R/W**	Light source color X 3
18	**LG2LG3**	**R/W**	Light source color X 3
19	**LB1LB2**	**R/W**	Light source color X 3
20	**LB3**	**R/W**	Light source color X 3
21	**RFC**	**R/W**	Far color (R)
22	**GFC**	**R/W**	Far color (G)
23	**BFC**	**R/W**	Far color (B)
24	**OFX**	**R/W**	Screen offset (X)
25	**OFY**	**R/W**	Screen offset (Y)
26	**H**	**R/W**	Screen position
27	**DQA**	**R/W**	Depth parameter A (coefficient)
28	**DQB**	**R/W**	Depth parameter B (offset)
29	**ZSF3**	**R/W**	Z-averaging scale factor
30	**ZSF4**	**R/W**	Z-averaging scale factor
31	**FLAG**	**R**	Flag

Data register group

Register number	Name	Access	Content
0	**VXY0**	**R/W**	Vector #0 (X/Y)
1	**VZ0**	**R/W**	Vector #0 (Z)
2	**VXY1**	**R/W**	Vector #1 (X/Y)
3	**VZ1**	**R/W**	Vector #1 (Z)
4	**VXY2**	**R/W**	Vector #2 (X/Y)
5	**VZ2**	**R/W**	Vector #2 (Z)
6	**RGB**	**R/W**	Color data + GTE instruction
7	**OTZ**	**R**	Z-component average value
8	**IR0**	**R/W**	Intermediate value #0
9	**IR1**	**R/W**	Intermediate value #1
10	**IR2**	**R/W**	Intermediate value #2
11	**IR3**	**R/W**	Intermediate value #3
12	**SXY0**	**R/W**	Calculation result record (XY)
13	**SXY1**	**R/W**	Calculation result record (XY)
14	**SXY2**	**R/W**	Calculation result record (XY)
15	**SXYP**	**W**	Calculation result setting register
16	**SZ0**	**R/W**	Calculation result record (Z)
17	**SZ1**	**R/W**	Calculation result record (Z)
18	**SZ2**	**R/W**	Calculation result record (Z)
19	**SZ3**	**R/W**	Calculation result record (Z)
20	**RGB0**	**R/W**	Calculation result record (color data)
21	**RGB1**	**R/W**	Calculation result record (color data)
22	**RGB2**	**R/W**	Calculation result record (color data)
23	**RES1**	**n/a**	Reserved by system (access prohibited)
24	**MAC0**	**R**	Sum of products #0
25	**MAC1**	**R/W**	Sum of products #1
26	**MAC2**	**R/W**	Sum of products #2
27	**MAC3**	**R/W**	Sum of products #3
28	**IRGB**	**W**	Color data input register
29	**ORGB**	**R**	Color data output register
30	**LZCS**	**W**	Leading zero/one count source data
31	**LZCR**	**R**	Leading zero/one count processing result

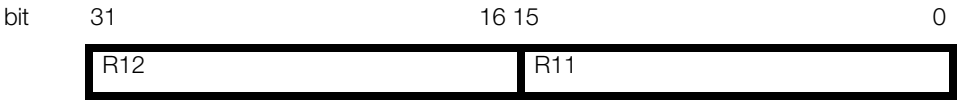
* Register details

Register number: Control #0

Register name: R11R12

Access: R/W

Bit pattern:



Fields:

R11	(1.3.12)	Element (1,1) of rotation matrix
R12	(1.3.12)	Element (1,2) of rotation matrix

Matrix expression:

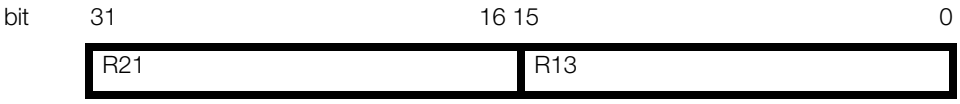
$$\text{Matrix X} = \begin{bmatrix} (1,1),(1,2),(1,3) \\ (2,1),(2,2),(2,3) \\ (3,1),(3,2),(3,3) \end{bmatrix}$$

Register number: Control #1

Register name: R21R13

Access: R/W

Bit pattern:



Fields:

R13	(1.3.12)	Element (1,3) of rotation matrix
R21	(1.3.12)	Element (2,1) of rotation matrix

Matrix expression:

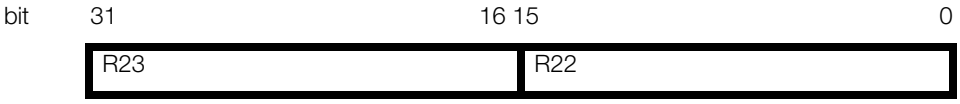
$$\text{Matrix X} = \begin{bmatrix} (1,1),(1,2),(1,3) \\ (2,1),(2,2),(2,3) \\ (3,1),(3,2),(3,3) \end{bmatrix}$$

Register number: Control #2

Register name: R23R22

Access: R/W

Bit pattern:



Fields:

R22	(1.3.12)	Element (2,2) of rotation matrix
R23	(1.3.12)	Element (2,3) of rotation matrix

Matrix expression:

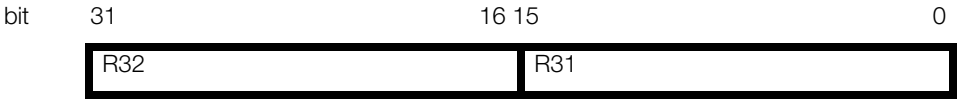
$$\text{Matrix X} = \begin{bmatrix} (1,1),(1,2),(1,3) \\ (2,1),(2,2),(2,3) \\ (3,1),(3,2),(3,3) \end{bmatrix}$$

Register number: Control #3

Register name: R32R31

Access: R/W

Bit pattern:



Fields:

R31	(1.3.12)	Element (3,1) of rotation matrix
R32	(1.3.12)	Element (3,2) of rotation matrix

Matrix expression:

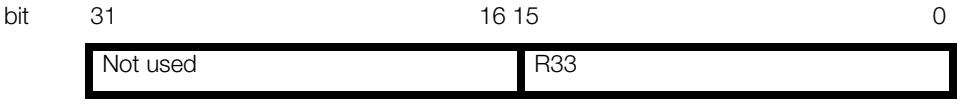
$$\text{Matrix X} = \begin{bmatrix} (1,1),(1,2),(1,3) \\ (2,1),(2,2),(2,3) \\ (3,1),(3,2),(3,3) \end{bmatrix}$$

Register number: Control #4

Register name: R33

Access: R/W

Bit pattern:



Fields:

R33	(1.3.12)	Element (3,3) of rotation matrix

Matrix expression:

$$\text{Matrix X} = \begin{bmatrix} (1,1),(1,2),(1,3) \\ (2,1),(2,2),(2,3) \\ (3,1),(3,2),(3,3) \end{bmatrix}$$

Register number: Control #5

Register name: TRX

Access: R/W

Bit pattern:

bit 31 0

Fields:

TRX	(1.31.0)	Translation vector X-component

Register number: Control #6

Register name: TRY

Access: R/W

Bit pattern:

bit 31 0

Fields:

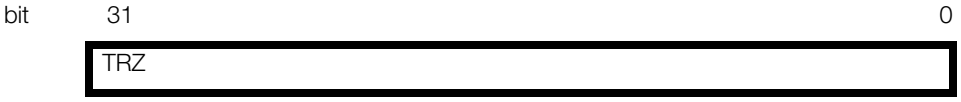
TRY	(1.31.0)	Translation vector Y-component

Register number: Control #7

Register name: TRZ

Access: R/W

Bit pattern:



Fields:

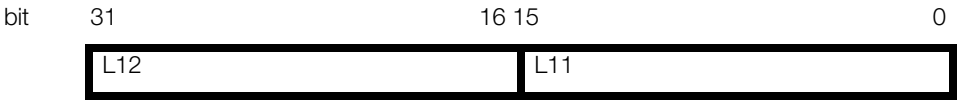
TRZ	(1.31.0)	Translation vector Z-component

Register number: Control #8

Register name: L11L12

Access: R/W

Bit pattern:



Fields:

L11	(1.3.12)	Light source direction vector #1 X-component
L12	(1.3.12)	Light source direction vector #1 Y-component

Matrix expression:

"Light source direction vector X 3" is a matrix combining three light source direction vectors. The allocation of the elements is as follows.

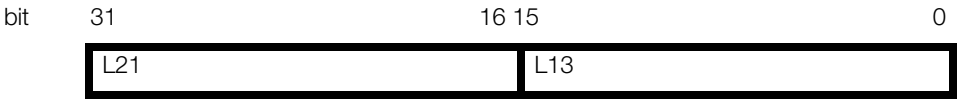
$$\text{Matrix}=\begin{bmatrix}(1,X),(1,Y),(1,Z)\\(2,X),(2,Y),(2,Z)\\(3,X),(3,Y),(3,Z)\end{bmatrix}$$

Register number: Control #9

Register name: L21L13

Access: R/W

Bit pattern:



Fields:

L13	(1.3.12)	Light source direction vector #1 Z-component
L21	(1.3.12)	Light source direction vector #2 X-component

Matrix expression:

"Light source direction vector X 3" is a matrix combining three light source direction vectors. The allocation of the elements is as follows.

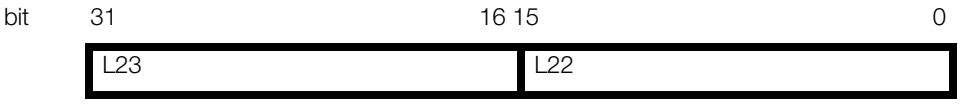
$$\text{Matrix}=\begin{bmatrix}(1,X),(1,Y),(1,Z)\\(2,X),(2,Y),(2,Z)\\(3,X),(3,Y),(3,Z)\end{bmatrix}$$

Register number: Control #10

Register name: L23L22

Access: R/W

Bit pattern:



Fields:

L22	(1.3.12)	Light source direction vector #2 Y-component
L23	(1.3.12)	Light source direction vector #2 Z-component

Matrix expression:

"Light source direction vector X 3" is a matrix combining three light source direction vectors. The allocation of the elements is as follows.

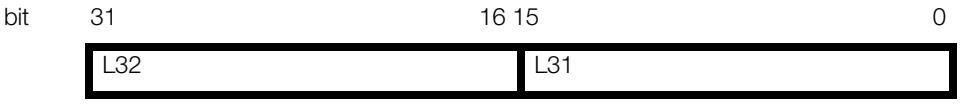
$$\text{Matrix}=\begin{bmatrix}(1,X),(1,Y),(1,Z)\\(2,X),(2,Y),(2,Z)\\(3,X),(3,Y),(3,Z)\end{bmatrix}$$

Register number: Control #11

Register name: L32L31

Access: R/W

Bit pattern:



Fields:

L31	(1.3.12)	Light source direction vector #3 X-component
L32	(1.3.12)	Light source direction vector #3 X-component

Matrix expression:

"Light source direction vector X 3" is a matrix combining three light source direction vectors. The allocation of the elements is as follows.

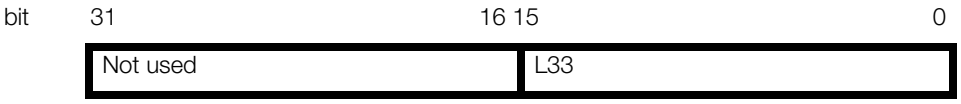
$$\text{Matrix}=\begin{bmatrix}(1,X),(1,Y),(1,Z)\\(2,X),(2,Y),(2,Z)\\(3,X),(3,Y),(3,Z)\end{bmatrix}$$

Register number: Control #12

Register name: L33

Access: R/W

Bit pattern:



Fields:

L33 (1.3.12) Light source direction vector #3 Z-component

Matrix expression:

"Light source direction vector X 3" is a matrix combining three light source direction vectors. The allocation of the elements is as follows.

$$\text{Matrix}=\begin{bmatrix}(1,X),(1,Y),(1,Z)\\(2,X),(2,Y),(2,Z)\\(3,X),(3,Y),(3,Z)\end{bmatrix}$$

Register number: Control #13

Register name: RBK

Access: R/W

Bit pattern:

bit 31 0

Fields:

RBK	(1.19.12)	Background color R-component

Register number: Control #14

Register name: GBK

Access: R/W

Bit pattern:

bit 31 0

Fields:

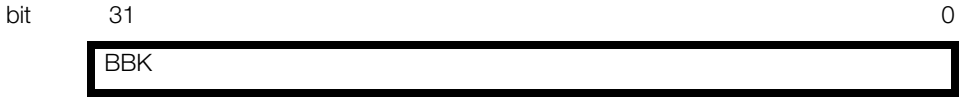
GBK	(1.19.12)	Background color G-component

Register number: Control #15

Register name: BBK

Access: R/W

Bit pattern:



Fields:

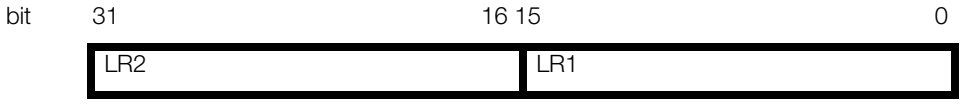
BBK	(1.19.12)	Background color B-component

Register number: Control #16

Register name: LR1LR2

Access: R/W

Bit pattern:



Fields:

LR1	(1.3.12)	Light source color #1 R-component
LR2	(1.3.12)	Light source color #2 R-component

Matrix expression:

"Light source color X 3" is a matrix combining three light source RGB expression color data values. The allocation of the elements is as follows.

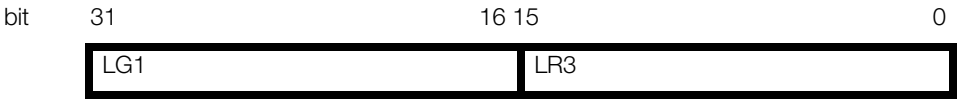
$$\text{Matrix}=\begin{bmatrix}(R,1),(R,2),(R,3)\\(G,1),(G,2),(G,3)\\(B,1),(B,2),(B,3)\end{bmatrix}$$

Register number: Control #17

Register name: LR3LG1

Access: R/W

Bit pattern:



Fields:

LR3	(1.3.12)	Light source color #3 R-component
LG1	(1.3.12)	Light source color #1 G-component

Matrix expression:

"Light source color X 3" is a matrix combining three light source RGB expression color data values. The allocation of the elements is as follows.

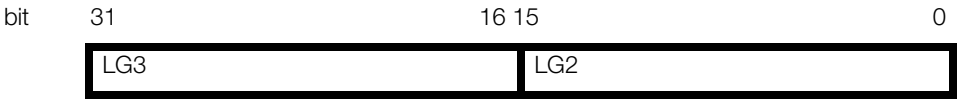
$$\text{Matrix}=\begin{bmatrix}(R,1),(R,2),(R,3)\\(G,1),(G,2),(G,3)\\(B,1),(B,2),(B,3)\end{bmatrix}$$

Register number: Control #18

Register name: LG2LG3

Access: R/W

Bit pattern:



Fields:

LG2	(1.3.12)	Light source color #2 G-component
LG3	(1.3.12)	Light source color #3 G-component

Matrix expression:

"Light source color X 3" is a matrix combining three light source RGB expression color data values. The allocation of the elements is as follows.

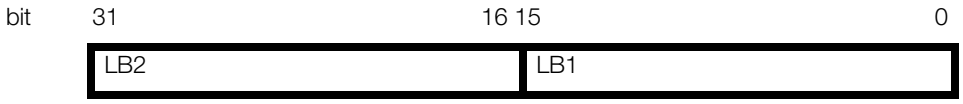
$$\text{Matrix}=\begin{bmatrix}(R,1),(R,2),(R,3)\\(G,1),(G,2),(G,3)\\(B,1),(B,2),(B,3)\end{bmatrix}$$

Register number: Control #19

Register name: LB1LB2

Access: R/W

Bit pattern:



Fields:

LB1	(1.3.12)	Light source color #1 B-component
LB2	(1.3.12)	Light source color #2 B-component

Matrix expression:

"Light source color X 3" is a matrix combining three light source RGB expression color data values. The allocation of the elements is as follows.

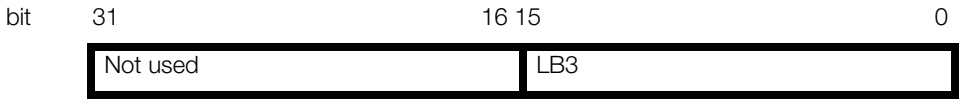
$$\text{Matrix}=\begin{bmatrix}(R,1),(R,2),(R,3)\\(G,1),(G,2),(G,3)\\(B,1),(B,2),(B,3)\end{bmatrix}$$

Register number: Control #20

Register name: LB3

Access: R/W

Bit pattern:



Fields:

LB3 (1.3.12) Light source color #3 B-component

Matrix expression:

"Light source color X 3" is a matrix combining three light source RGB expression color data values. The allocation of the elements is as follows.

$$\text{Matrix}=\begin{bmatrix}(R,1),(R,2),(R,3)\\(G,1),(G,2),(G,3)\\(B,1),(B,2),(B,3)\end{bmatrix}$$

Register number: Control #21

Register name: RFC

Access: R/W

Bit pattern:

bit 31 0

Fields:

RFC	(1.27.4)	Far color R-component

Register number: Control #22

Register name: GFC

Access: R/W

Bit pattern:

bit 31 0

Fields:

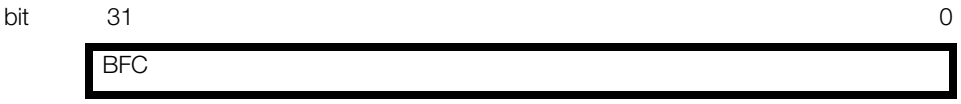
GFC	(1.27.4)	Far color G-component

Register number: Control #23

Register name: BFC

Access: R/W

Bit pattern:



Fields:

BFC	(1.27.4)	Far color B-component

Register number: Control #24

Register name: OFX

Access: R/W

Bit pattern:

Fields:

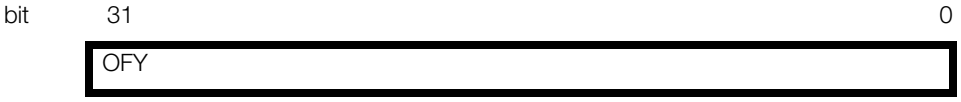
OFX	(1.15.16)	Screen offset X-component

Register number: Control #25

Register name: OFY

Access: R/W

Bit pattern:



Fields:

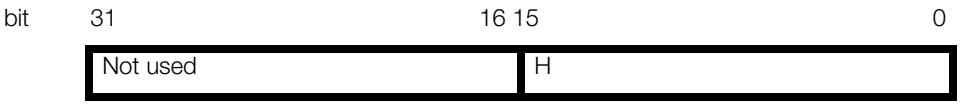
OFY	(1.15.16)	Screen offset Y-component

Register number: Control #26

Register name: H

Access: R/W

Bit pattern:



Fields:

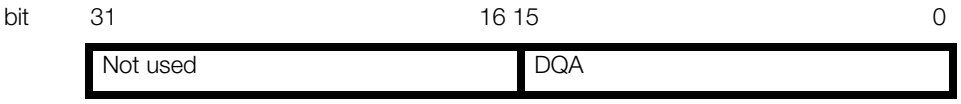
H	(0.16.0)	Screen position

Register number: Control #27

Register name: DQA

Access: R/W

Bit pattern:



Fields:

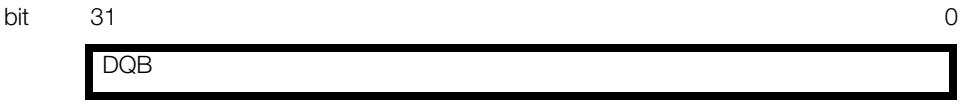
DQA	(1.7.8)	Depth parameter A (coefficient)

Register number: Control #28

Register name: DQB

Access: R/W

Bit pattern:



Fields:

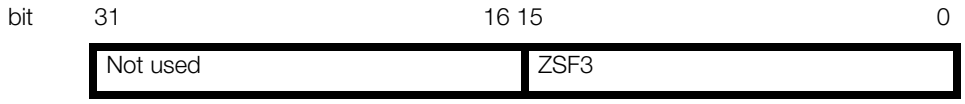
DQB	(1.7.24)	Depth parameter B (offset)

Register number: Control #29

Register name: ZSF3

Access: R/W

Bit pattern:



Fields:

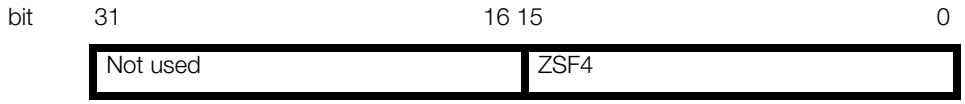
ZSF3	(1.3.12)	Z-averaging scale factor (normally set to 1/3)

Register number: Control #30

Register name: ZSF4

Access: R/W

Bit pattern:



Fields:

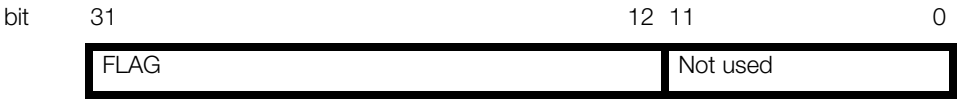
ZSF4	(1.3.12)	Z-averaging scale factor (normally set to 1/4)

Register number: Control #31

Register name: FLAG

Access: R/W

Bit pattern:



Fields:

FLAG As indicated in table below

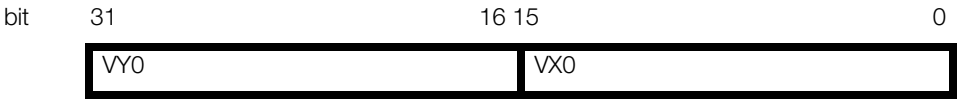
Bit number	Content
31	Logical sum of bits 30 - 23 and bits 18 - 13
30	1: Calculation test result #1 overflow generated (2^43 or more)
29	1: Calculation test result #2 overflow generated (2^43 or more)
28	1: Calculation test result #3 overflow generated (2^43 or more)
27	1: Calculation test result #1 underflow generated (less than -2^43)
26	1: Calculation test result #2 underflow generated (less than -2^43)
25	1: Calculation test result #3 underflow generated (less than -2^43)
24	1: Limiter A1 out of range detected (less than 0 or less than -2^15, or 2^15 or more)
23	1: Limiter A2 out of range detected (less than 0 or less than -2^15, or 2^15 or more)
22	1: Limiter A3 out of range detected (less than -0 or less than -2^15, or 2^15 or more)
21	1: Limiter B1 out of range detected (less than 0, or 2^8 or more)
20	1: Limiter B2 out of range detected (less than 0, or 2^8 or more)
19	1: Limiter B3 out of range detected (less than 0, or 2^8 or more)
18	1: Limiter C out of range detected (less than 0, or 2^16 or more)
17	1: Divide overflow generated (quotient of 2.0 or more)
16	1: Calculation test result #4 overflow generated (2^31 or more)
15	1: Calculation test result #4 underflow generated (less than -2^31)
14	1: Limiter D1 out of range detected (less than -2^10, or 2^10 or more)
13	1: Limiter D2 out of range detected (less than -2^10, or 2^10 or more)
12	1: limE out of range detected (less than 0, or 2^12 or more)

Register number: Data #0

Register name: VXY0

Access: R/W

Bit pattern:



Fields:

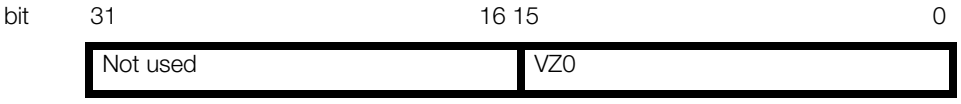
VX0	(1.15.0) or (1.3.12)	Vector #0 X-element
VY0	(1.15.0) or (1.3.12)	Vector #0 Y-element

Register number: Data #1

Register name: VZ0

Access: R/W

Bit pattern:



Fields:

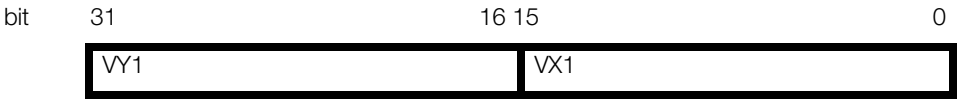
VZ0	(1.15.0) or (1.3.12)	Vector #0 Z-element

Register number: Data #2

Register name: VXY1

Access: R/W

Bit pattern:



Fields:

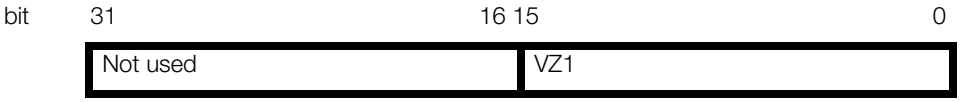
VX1	(1.15.0) or (1.3.12)	Vector #1 X-element
VY1	(1.15.0) or (1.3.12)	Vector #1 Y-element

Register number: Data #3

Register name: VZ1

Access: R/W

Bit pattern:



Fields:

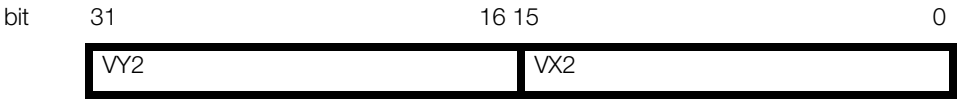
VZ1	(1.15.0) or (1.3.12)	Vector #1 Z-element

Register number: Data #4

Register name: VXY2

Access: R/W

Bit pattern:



Fields:

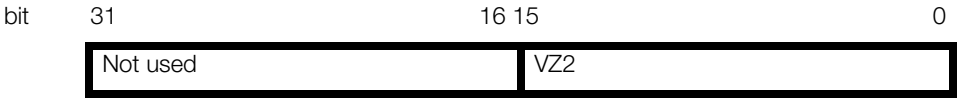
VX2	(1.15.0) or (1.3.12)	Vector #2 X-element
VY2	(1.15.0) or (1.3.12)	Vector #2 Y-element

Register number: Data #5

Register name: VZ2

Access: R/W

Bit pattern:



Fields:

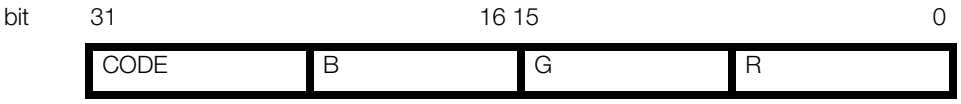
VZ2	(1.15.0) or (1.3.12)	Vector #2 Z-element

Register number: Data #6

Register name: RGB

Access: R/W

Bit pattern:



Fields:

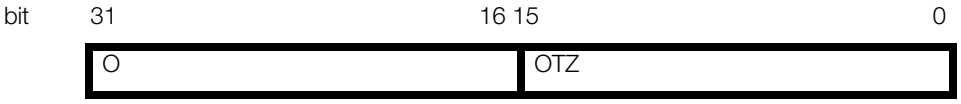
R	(0.8.0)	Characteristic color R-element
G	(0.8.0)	Characteristic color G-element
B	(0.8.0)	Characteristic color B-element
CODE	(-.8.-)	Arbitrary 8-bit data (normally specified by GPU draw command)

Register number: Data #7

Register name: OTZ

Access: R

Bit pattern:



Fields:

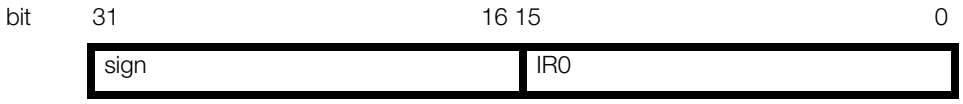
OTZ	(0.15.0)	Z-element average value

Register number: Data #8

Register name: IR0

Access: R/W

Bit pattern:



Fields:

IR0 (1.3.12) or the like Intermediate value #0

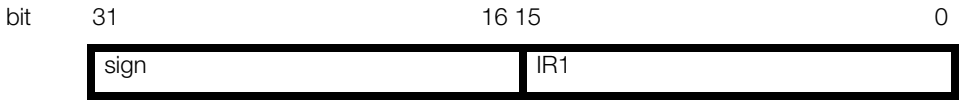
sign All bits 0 or 1

Register number: Data #9

Register name: IR1

Access: R/W

Bit pattern:



Fields:

IR1 (1.3.12) or the like Intermediate value #1

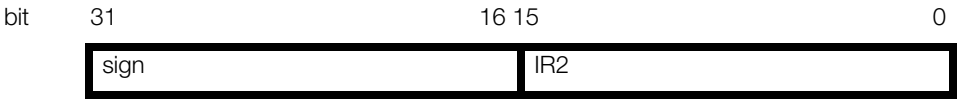
sign All bits 0 or 1

Register number: Data #10

Register name: IR2

Access: R/W

Bit pattern:



Fields:

IR2 (1.3.12) or the like Intermediate value #2

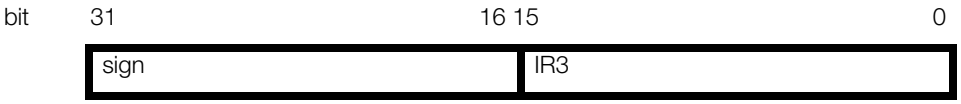
sign All bits 0 or 1

Register number: Data #11

Register name: IR3

Access: R/W

Bit pattern:



Fields:

IR3 (1.3.12) or the like Intermediate value #3

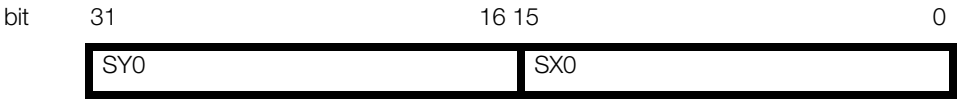
sign All bits 0 or 1

Register number: Data #12

Register name: SXY0

Access: R/W

Bit pattern:



Fields:

SX0 (1.15.0)

X-element of 2-dimensional screen coordinates or 2-dimensional coordinates following perspective transformation. Note that this value was obtained in the calculation three times previous.

SY0 (1.15.0)

Y-element of 2-dimensional screen coordinates or 2-dimensional coordinates following perspective transformation. Note that this value was obtained in the calculation three times previous.

Internal operations:

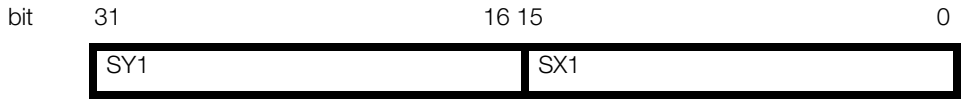
See data #14: SXY2 and data #15: SXYP.

Register number: Data #13

Register name: SXY1

Access: R/W

Bit pattern:



Fields:

SX1 (1.15.0) X-element of 2-dimensional screen coordinates or 2-dimensional coordinates following perspective transformation. Note that this value was obtained in the calculation two times previous.

SY1 (1.15.0) Y-element of 2-dimensional screen coordinates or 2-dimensional coordinates following perspective transformation. Note that this value was obtained in the calculation two times previous.

Internal operations:

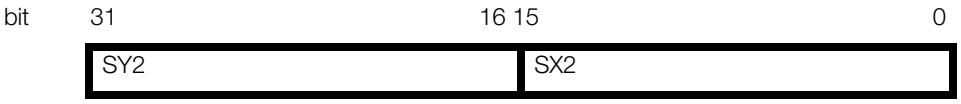
See data #14: SXY2 and data #15: SXYP.

Register number: Data #14

Register name: SXY2

Access: R/W

Bit pattern:



Fields:

SX2 (1.15.0) X-element of 2-dimensional screen coordinates or 2-dimensional coordinates following perspective transformation. Note that this value was obtained in the calculation one time previous.

SY2 (1.15.0) Y-element of 2-dimensional screen coordinates or 2-dimensional coordinates following perspective transformation. Note that this value was obtained in the calculation one time previous.

Internal operations:

In several GTE instructions, substitutions are made in the following sequence.

SXY0 = SXY1;

SXY1 = SXY2;

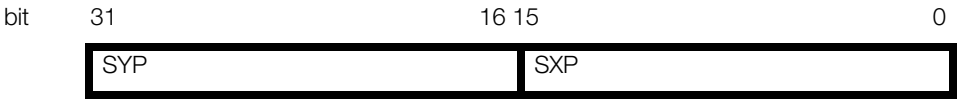
SXY2 = Coordinate XY-elements obtained through calculation

Register number: Data #15

Register name: SXYP

Access: W

Bit pattern:



Fields:

SXP	(1.15.0)	X-element of coordinates transferred to SXY2
SYP	(1.15.0)	Y-element of coordinates transferred to SXY2

Internal operations:

The following operations are generated at the same time as the write.

SXY0 = SXY1;

SXY1 = SXY2;

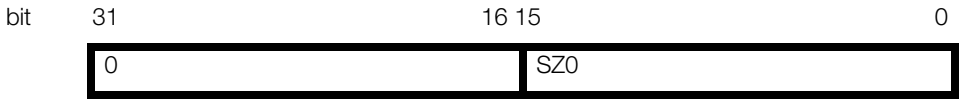
SXY2 = SXYP;

Register number: Data #16

Register name: SZ0

Access: R/W

Bit pattern:



Fields:

SZ0	(0.16.0)	Screen coordinate Z-element. Note that this value was obtained in the calculation four times previous.

Internal operations:

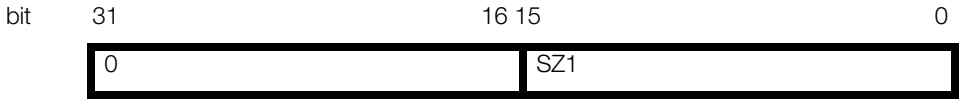
See data #19: SZ3.

Register number: Data #17

Register name: SZ1

Access: R/W

Bit pattern:



Fields:

SZ1	(0.16.0)	Screen coordinate Z-element. Note that this value was obtained in the calculation three times previous.

Internal operations:

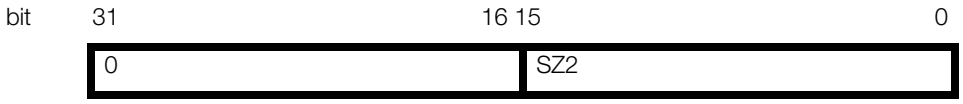
See data #19: SZ3.

Register number: Data #18

Register name: SZ2

Access: R/W

Bit pattern:



Fields:

SZ2 (0.16.0) Screen coordinate Z-element. Note that this value was obtained in the calculation two times previous.

Internal operations:

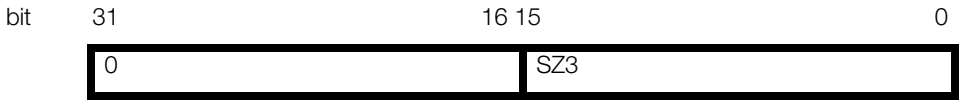
See data #19: SZ3.

Register number: Data #19

Register name: SZ3

Access: R/W

Bit pattern:



Fields:

SZ3 (0.16.0) Screen coordinate Z-element. Note that this value was obtained in the calculation one time previous.

Internal operations:

In several GTE instructions, substitutions are made in the following sequence.

SZ0 = SZ1;

SZ1 = SZ2;

SZ2 = SZ3;

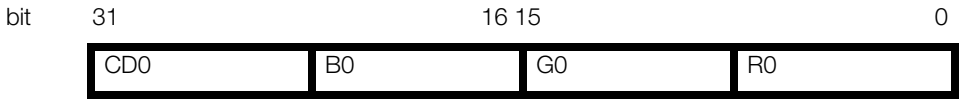
SZ3 = Coordinate Z-element obtained through calculation

Register number: Data #20

Register name: RGB0

Access: R/W

Bit pattern:



Fields:

R0	(0.8.0)	Characteristic color R-element
G0	(0.8.0)	Characteristic color G-element
B0	(0.8.0)	Characteristic color B-element
CD0	(-.8.-)	Arbitrary 8-bit data

Internal operations:

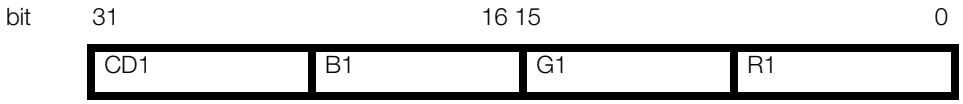
See data #22: RGB2.

Register number: Data #21

Register name: RGB1

Access: R/W

Bit pattern:



Fields:

R1	(0.8.0)	Characteristic color R-element
G1	(0.8.0)	Characteristic color G-element
B1	(0.8.0)	Characteristic color B-element
CD1	(-.8.-)	Arbitrary 8-bit data

Internal operations:

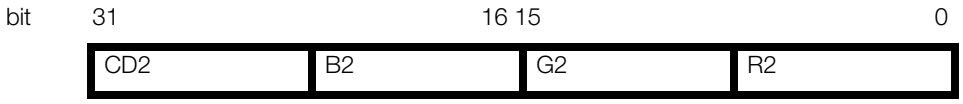
See data #22: RGB2.

Register number: Data #22

Register name: RGB2

Access: R/W

Bit pattern:



Fields:

R2	(0.8.0)	Characteristic color R-element
G2	(0.8.0)	Characteristic color G-element
B2	(0.8.0)	Characteristic color B-element
CD2	(-.8.-)	Arbitrary 8-bit data

Internal operations:

When several GTE instructions are executed, substitutions are made in the following sequence.

R0 = R1;

R1 = R2;

R2 = RGB Register R-field

G0 = G1;

G1 = G2;

G2 = RGB Register R-field

B0 = B1;

B1 = B2;

B2 = RGB Register R-field

CD0 = CD1;

CD1 = CD2;

CD 2 = Bit pattern of GTE instruction currently being executed;

Register number: Data #23

Register name: RES1

Access: Prohibited

Register number: Data #24

Register name: MAC0

Access: R/W

Bit pattern:

bit 31 0

Fields:

MAC0 (1.31.0) Sum of products value #1

Register number: Data #25

Register name: MAC1

Access: R/W

Bit pattern:

bit 31 0

Fields:

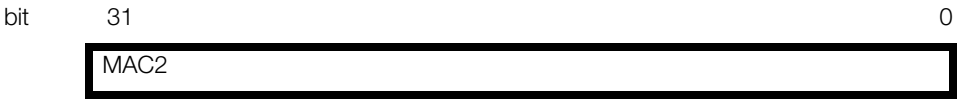
MAC1 (1.31.0) Sum of products value #2

Register number: Data #26

Register name: MAC2

Access: R/W

Bit pattern:



Fields:

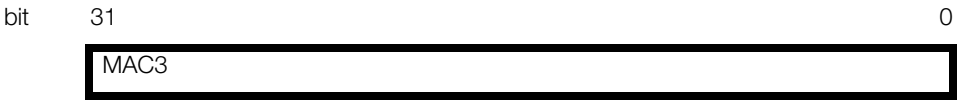
MAC2	(1.31.0)	Sum of products value #2

Register number: Data #27

Register name: MAC3

Access: R/W

Bit pattern:



Fields:

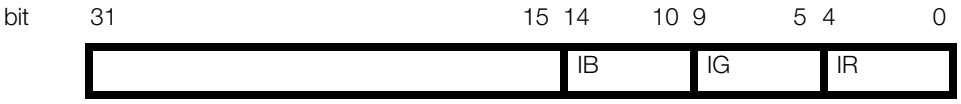
MAC3	(1.31.0)	Sum of products value #3

Register number: Data #28

Register name: IRGB

Access: W

Bit pattern:



Fields:

IR	(-.5.-)	Color data (R-element) to be set as intermediate value
IG	(-.5.-)	Color data (R-element) to be set as intermediate value
IB	(-.5.-)	Color data (R-element) to be set as intermediate value

Internal operations:

The following processing is accomplished by writing data to this register.

IR1 = The value which format-converted R to (1.11.4)

IR2 = The value which format-converted G to (1.11.4)

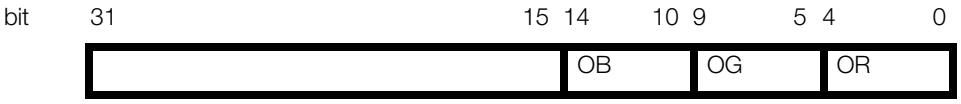
IR3 = The value which format-converted B to (1.11.4)

Register number: Data #29

Register name: ORGB

Access: R

Bit pattern:



Fields:

OR	(-.5.-)	Color data generated from intermediate value (R-element)
OG	(-.5.-)	Color data generated from intermediate value (R-element)
OB	(-.5.-)	Color data generated from intermediate value (R-element)

Internal operations:

By reading data from this register, the following operations are performed, including substitutions to each field.

OR = (IR1>>7)&0x1f;

OG = (IR2>>7)&0x1f;

OB = (IR3>>7)&0x1f;

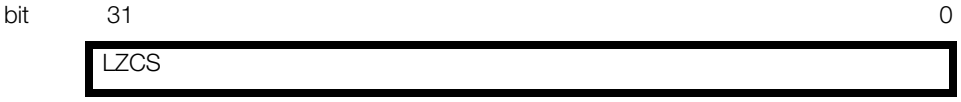
The results obtained are then read.

Register number: Data #30

Register name: LZCS

Access: W

Bit pattern:



Fields:

LZCS	(1.31.0)	LZC source data

Internal operations:

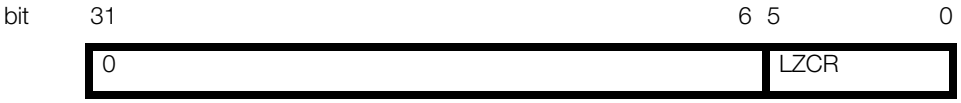
See data #31: LZCR.

Register number: Data #31

Register name: LZCR

Access: R

Bit pattern:



Fields:

LZCR	(1.31.0)	Leading zero/one count calculation result

Internal operations:

By reading data from this register, the following operations are performed, including substitutions to each field.

data #3: If the value of LZCS is positive,

LZCR = Leading zero count of LZCS value

data #3: If the value of LZCS is negative,

LZCR =Leading one count of LZCS value

The results obtained are then read.