

Amiga joystick extensions

Amiga 4-joystick parport extension

Parallel port pins:

Pin	Meaning	Pin	Meaning
2	Up1	6	Up2
3	Down1	7	Down2
4	Left1	8	Left2
5	Right1	9	Right2
13	Fire1	11	Fire2
18	Gnd1	18	Gnd2

Amiga digital joystick pinout

Pin	Meaning
1	Up
2	Down
3	Left
4	Right
5	n/c
6	Fire button
7	+5V (50mA)
8	Gnd
9	Thumb button

Amiga mouse pinout

Pin	Meaning
1	V-pulse
2	H-pulse
3	VQ-pulse
4	HQ-pulse
5	Middle button
6	Left button
7	+5V (50mA)
8	Gnd
9	Right button

Amiga analog joystick pinout

Pin	Meaning
1	Top button
2	Top2 button
3	Trigger button
4	Thumb button
5	Analog X
6	n/c
7	+5V (50mA)
8	Gnd
9	Analog Y

Amiga lightpen pinout

Pin	Meaning
1	n/c
2	n/c
3	n/c
4	n/c
5	Touch button

Pin	Meaning
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6	/Beamtrigger
7	+5V (50mA)
8	Gnd
9	Stylus button

NAME	rev	ADDR	type	chip	Description
JOY0DAT		00A	R	Denise	Joystick-mouse 0 data (left vert, horiz)
JOY1DAT		00C	R	Denise	Joystick-mouse 1 data (right vert,horiz)

These addresses each read a 16 bit register. These in turn are loaded from the MDAT serial stream and are clocked in on the rising edge of SCLK. MLD output is used to parallel load the external parallel-to-serial converter. This in turn is loaded with the 4 quadrature inputs from each of two game controller ports (8 total) plus 8 miscellaneous control bits which are new for LISA and can be read in upper 8 bits of LISAIID.

Register bits are as follows:

- Mouse counter usage (pins 1,3 =Yclock, pins 2,4 =Xclock)

BITS#	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
JOY0DAT	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0	X7	X6	X5	X4	X3	X2	X1	X0
JOY1DAT	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0	X7	X6	X5	X4	X3	X2	X1	X0

0=LEFT CONTROLLER PAIR, 1=RIGHT CONTROLLER PAIR. (4 counters total). The bit usage for both left and right addresses is shown below. Each 6 bit counter (Y7-Y2,X7-X2) is clocked by 2 of the signals input from the mouse serial stream. Starting with first bit received:

Serial	Bit Name	Description
0	M0H	JOY0DAT Horizontal Clock
1	M0HQ	JOY0DAT Horizontal Clock (quadrature)
2	M0V	JOY0DAT Vertical Clock
3	M0VQ	JOY0DAT Vertical Clock (quadrature)
4	M1V	JOY1DAT Horizontal Clock
5	M1VQ	JOY1DAT Horizontal Clock (quadrature)
6	M1V	JOY1DAT Vertical Clock
7	M1VQ	JOY1DAT Vertical Clock (quadrature)

Bits 1 and 0 of each counter (Y1-Y0,X1-X0) may be read to determine the state of the related input signal pair. This allows these pins to double as joystick switch inputs. Joystick switch closures can be deciphered as follows:

Directions	Pin#	Counter bits
Forward	1	Y1 xor Y0 (BIT#09 xor BIT#08)
Left	3	Y1
Back	2	X1 xor X0 (BIT#01 xor BIT#00)
Right	4	X1

NAME	rev	ADDR	type	chip	Description
JOYTEST		036	W	Denise	Write to all 4 joystick-mouse counters at once.

Mouse counter write test data:

BITS#	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
JOYxDAT	Y7	Y6	Y5	Y4	Y3	Y2	xx	xx	X7	X6	X5	X4	X3	X2	xx	xx
JOYxDAT	Y7	Y6	Y5	Y4	Y3	Y2	xx	xx	X7	X6	X5	X4	X3	X2	xx	xx

NAME	rev	ADDR	type	chip	Description
POT0DAT	h	012	R	Paula	Pot counter data left pair (vert, horiz)
POT1DAT	h	014	R	Paula	Pot counter data right pair (vert,horiz)

These addresses each read a pair of 8 bit pot counters. (4 counters total). The bit assignment for both addresses is shown below. The counters are stopped by signals from 2 controller connectors (left-right) with 2 pins each.

BIT#	15	14	13	12	11	10	09	08	07		06	05	04	03	02	01	00
RIGHT	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0	X7		X6	X5	X4	X3	X2	X1	X0
LEFT	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0	X7		X6	X5	X4	X3	X2	X1	X0

CONNECTORS				PAULA
Loc.	Dir.	Sym	pin	pin
RIGHT	Y	RX	9	33
RIGHT	X	RX	5	32
LEFT	Y	LY	9	36
LEFT	X	LX	5	35

With normal (NTSC or PAL) horiz. line rate, the pots will give a full scale (FF) reading with about 500kohms in one frame time. With proportionally faster horiz line times, the counters will count proportionally faster. This should be noted when doing variable beam displays.

NAME	rev	ADDR	type	chip	Description
POTGO		034	W	Paula	Pot port (4 bit) bi-direction and data, and pot counter start.

NAME	rev	ADDR	type	chip	Description
POTINP		016	R	Paula	Pot pin data read

This register controls a 4 bit bi-direction I/O port that shares the same 4 pins as the 4 pot counters above.

BIT#	FUNCTION	DESCRIPTION
15	OUTRY	Output enable for Paula pin 33
14	DATRY	I/O data Paula pin 33
13	OUTRX	Output enable for Paula pin 32
12	DATRX	I/O data Paula pin 32
11	OUTLY	Output enable for Paula pin 36
10	DATLY	I/O data Paula pin 36
09	OUTLX	Output enable for Paula pin 35
08	DATLX	I/O data Paula pin 35
07-01	X	Not used
00	START	Start pots (dump capacitors,start counters)