

APPENDIX A — GLOSSARY

- Address bus** — a set of 16 connections which allow the CPU to select the location at which it wishes to perform a particular operation.
- Active low** — signals which are 'active low' are deemed to be operational when they are at logic 0.
- Analogue to digital converter (ADC)** — a circuit to convert an analogue voltage into digital number which can be read by a computer.
- Asynchronous** — when two devices are operating independently of one another, they are said to be operating asynchronously.
- Bidirectional** — able to transmit and receive information.
- Bit of memory** — the fundamental unit of memory. Each bit can be either 0 or 1.
- Byte of memory** — 8 bits of memory. The CPU reads and writes data 8 bits — 1 byte at a time via the data bus.
- Binary** — a number system based on two instead of the ten used in the decimal system.
- Chip** — named after the small silicon wafer or chip which has all of the computer circuits etched into it. This small silicon circuit is often packaged in black plastic packages with rows of metal pins to connect it to the outside world.
- CPU** — central processing unit. The Z80A in the Spectrum. This device does all of the computing work.
- Crash** — what happens when the CPU starts to run a program of nonsense. Generally, crash causes the computer to get into such a mess that the only solution is to turn it off and start again from scratch.
- Crystal** — a small piece of quartz crystal cut to an exact size so that it resonates at some fixed frequency. Used to fix the frequency at which clocks run to an exact value.
- Data bus** — a set of eight connections over which all data transactions between devices in the Spectrum occur.
- Heatsink** — a device designed to conduct heat away from small components. The large piece of aluminium in the Spectrum conducts heat away from the +5 volt regulator to keep it cool.
- Hex** — short for hexadecimal. This number system is based on 16 instead of 10 in decimal. The characters 0 1 2 3 4 5 6 7 8 9 A B C D E F are used to represent 0 — 15. The number 1FHex is therefore equivalent to $1 \times 16 + 15 = 31$ decimal. Hexadecimal is useful because 0 — 255 is 0 — FFHex, so only 2 digits are required to represent any of the possible numbers which can be transferred on the data bus.
- High** — sometimes used to indicate logic level 1
- Interrupt** — a signal produced by external devices to interrupt whatever the CPU is doing and make it do something else.
- Light emitting diode** — a device which will only pass current in one direction. Light is emitted when the device is conducting.
- Low** — sometimes used to signify logic level 0.

DRAWING PROGRAM LISTING

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10 REM JOYSTICK DRAWING PROGRAM
20 REM
30 REM SET UP THE PIO PORTS
40 LET DA = 31: LET CA = 95
50 LET DB = 63: LET CB = 127
60 OUT CA, BIN 11111111
70 OUT CA, BIN 00001000
80 OUT CB, BIN 11111111
90 OUT CB, BIN 11111111
100 LET AS = "S"
110 LET X1 = 0: LET Y1 = 0
120 REM SET UP THE SCREEN FOR PLOTTING
130 BORDER 7: PAPER 7: INK 0: CLS
140 REM READ X COORDINATE
150 OUT DA, BIN 00000000
160 OUT DA, BIN 00000111
170 LET X = IN DB
180 REM READY COORDINATE
190 OUT DA, BIN 00000000
200 OUT DA, BIN 00010111
210 LET Y = IN DB * 175 / 255
220 REM D = DRAW, S = STOP DRAW, N = NEW PICTURE
230 IF INKEY$ = "D" THEN LET AS = "D"
240 IF INKEY$ = "S" THEN LET AS = "S"
250 IF INKEY$ = "N" THEN GO TO 100
260 IF AS = "D" THEN GO TO 350
270 REM FLASH DRAWING POINT
280 PLOT OVER 1: X, Y
290 REM GENERATE DELAY
300 PAUSE 10
310 PLOT OVER 1: X, Y
320 LET X1 = X
330 LET Y1 = Y
340 GO TO 140
350 REM DRAW
360 PLOT X1, Y1
370 DRAW X-X1, Y-Y1
380 GO TO 320
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