A TIMEXSINCLAIR.COM COMMUNITY GUIDE

HOMEGROWN

NORTH AMERICAN SOFTWARE FOR THE TIMEX/SINCLAIR 2068

Eighty-one programs from the American and Canadian users of the TS2068: games, desktop publishing, music, languages, disk systems and bulletin boards, made for a computer whose maker left the market a few months after it went on sale.

TS2068 · TC2068

1983–1996

TIMEXSINCLAIR.COM

00 ABOUT THIS GUIDE

Timex launched the TS2068 in late 1983 and left the computer business in early 1984. The machine had better sound, a second screen, Extended Colour and 512-column modes and bank-switched memory that its British cousin the Spectrum lacked, but almost no commercial support to show them off. The software came instead from its users: small firms such as Zebra Systems, Lemke Software, Sharp's and RMG; Canadian makers like Larken and Byte Power; magazines including Time Designs and UPDATE; and user groups such as CATS, SINCUS, ISTUG and LIST, whose public-domain libraries passed programs from coast to coast.

This guide collects the best of that North American work. Every program in it was written or first published in the United States or Canada, or substantially reworked here. Spectrum titles that Timex and others repackaged for the American market are left out; they are well documented elsewhere. Compared with the British scene, North American programmers wrote fewer arcade games and more utilities, desktop publishing, communications, music and household software, and they used the 2068's own hardware far more.

The programs are grouped by what they do. Each entry says what the program is, what it is like to use, and why it is worth your time, with a comparison where one helps.

HOW TO TRY THESE PROGRAMS

Every program here has a page on timexsinclair.com. Many have a Run in Browser button that starts the program in an emulator in your web browser, with nothing to install. Otherwise, download the tape and load it in an emulator that supports the TS2068, such as ZEsarUX or Fuse.

Some programs need hardware: a Larken or Oliger disk system, a printer interface, a modem, or a joystick. Their entries say so. Programs that came on a public-domain library tape tell you which tape to download.

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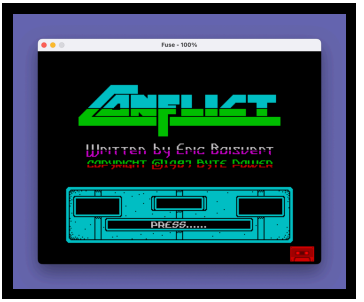
01 GAMES: ARCADE & ACTION

Arcade games were the thinnest part of the North American 2068 catalogue. Timex released a few US-made titles before it left the computer business in early 1984; after that the steadiest source was Byte Power, Eric and Kristian Boisvert's Canadian tape magazine, which carried machine-code games from August 1986, while magazines and user-group libraries supplied BASIC games. Look for games that use the 2068's own joystick ports and AY sound chip, and for Byte Power's habit of supporting Timex and Spectrum joysticks in the same game.

Conflict

Eric Boisvert / Byte Power, 1988



A machine-code arcade adventure: guide Bouncer through the land of Galna, find its ruler and destroy him.

You steer Bouncer through Galna's territory, dodging or shooting his guards and collecting magic pills that increase your fire power, until you track down Galna himself. The game is a 29 KB machine-code block behind a protected BASIC loader. It supports what Byte Power called its 3-way joystick system: the TS2068's left joystick port or a Kempston interface, a ZX Interface II, or a cursor joystick, with Q, A, O, P and SPACE on the keyboard as well. 0 pauses, and SYMBOL SHIFT and A (STOP) resets the game.

Conflict came on the February 1988 tape (Issue 9) of Byte Power, the tape magazine Eric and Kristian Boisvert published in Canada, and the editors called it their best program ever. It is the most ambitious original action game from a North American 2068 author on the site. The joystick menu shows who it was written for: owners of the Timex ports and owners of Spectrum add-ons alike. From this issue on Byte Power's games were copy-protected, and the loader shows it, with decoy numbers and a line 0 that hides the rest of the listing.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. A joystick helps, but the keyboard works. timexsinclair.com/computer_media/conflict/

Grand Prix

Eric & Kristian Boisvert / Byte Power, 1986

A 3D racing game against the clock, written in machine code for Byte Power's first issue.

You race a 3D track against the clock with the joystick or the keyboard: Q accelerates, A brakes, and O and P steer. Speed is not the only problem. Take the hairpins too hard and the tires wear until one blows; keep the engine flat out too long and it overheats. Either one ends your race, and so does running out of time. There are four tracks and a demo mode, and finishing first earns the message that you are the new champion of Grand Prix.

Grand Prix was on the first Byte Power tape in August 1986. The entire game lives as machine code inside the REM of line 0, with a three-line BASIC shell to start it, a Sinclair trick that keeps a whole program in one file. The tire and engine failures are what make it worth more than a few laps: you have to decide how hard to push on each corner instead of simply holding the accelerator down.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. The magazine gives the tape loading time as 3 minutes. timexsinclair.com/computer_media/grand-prix/

Weird Balls (Astro II)

Eric Boisvert / Byte Power, 1988

A fast machine-code shoot-'em-up in which anything you let past costs you points.

The instructions are short: shoot everything that moves, and don't let anything slip by, because each one that gets past takes points off your score. It is a follow-up to Astro from Byte Power's September 1986 issue, and like the other games on its tape it uses the magazine's 3-way joystick system (TS2068 left port or Kempston, ZX Interface II, or cursor joystick), with Q, A, O, P, SPACE to fire and 0 to pause on the keyboard.

Weird Balls shared the February 1988 tape (Issue 9) with Conflict and Water Balloon Masters, the issue where Byte Power's games became copy-protected. It loads in two stages, a first block that sets up the screen and then the 10 KB game loaded over it. The magazine's own description runs to two sentences, so the best way to learn it is to load it and play. Taken with Conflict, it shows how far the Boisverts' machine code had come since their 1986 issues.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/weird-balls-astro-ii/

Water Balloon Masters

Eric Boisvert / Byte Power, 1988

A "splash-'em-down" game: drop water balloons on the pedestrians below before the clock runs out.

You hold a water balloon above a street and let go as people walk underneath. Faster pedestrians are worth more points, and the magazine notes that Eric himself is one of them. Each hit lowers a bonus counter, and when it reaches zero you can move on to the next level; you have 90 seconds for each. If you clear the counter with time to spare, SYMBOL SHIFT and A (STOP) takes you straight to the next level. There is a colour or black-and-white display option and the Byte Power 3-way joystick system, plus keyboard control.

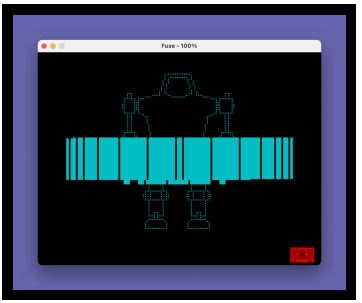
Byte Power's notes introduced it with a joke: you have heard of shoot-'em-ups, so how about a splash-'em-down game? It is the most light-hearted program in this guide, and the reversed bonus counter, which goes down instead of up as you score, gives each level a clear target. It came on the February 1988 tape (Issue 9), alongside Conflict.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/water-balloon-masters/

Robot

Eric Boisvert / Byte Power, 1986

Defend the Earth against waves of invading robots, each generation faster and more numerous than the last.



Robots descend on the Earth in generations, and every new generation is faster, stronger and larger in number than the one before. Your ship's on-board computer will not let one land: if a robot gets too close to the surface, the computer destroys your ship to take the robot with it. Press 1 to pause and STOP to reset. The game is machine code held in the REM of line 0 of a 30 KB BASIC program.

Robot was one of the games on the very first Byte Power tape, August 1986, and a REM in it reads "Copyright BYTE POWER 1986 Written by Eric Boisvert". The shape is familiar from Space Invaders and its many clones, where the enemy must not reach the ground. The self-destruct rule is the twist: you give up your ship rather than let a robot land, and the waves keep speeding up.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. The tape took about 2 minutes 30 seconds to load. timexsinclair.com/computer_media/robot/

Sky Diver

Kristian Boisvert / Byte Power, 1987

Two parachuting games: see how long you dare wait before you pull the cord, then try to land on a moving target.

The menu offers two games, each with a practice mode. In "Chicken?" you score more the longer you wait before opening the parachute, but open it too late and you land hard, too early and you score nothing. In "Moving Target" you must come down on a target sliding along the ground at one of three speeds, again with points for waiting. Wind pushes you about as you steer. SPACE or the joystick button opens the chute, Q and P steer, R ends a game, and you can set the target to a random spot or the middle. The instructions are built in.

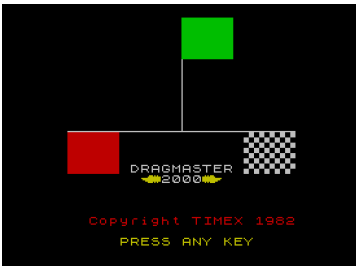
Kristian Boisvert wrote it for Byte Power's Fall 1987 tape (Issue 8). It is a simple idea, finished properly: one 15 KB machine-code block, a clean menu, practice rounds and on-screen instructions. It also shows Byte

Power writing for both machines, since the notes mention a Kempston joystick on the Spectrum. A good choice for a short game with someone watching.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/sky-diver/

Dragmaster

Timex Computer Corporation, 1983



A quarter-mile drag race: launch on the green light, shift through four gears and beat the best time.

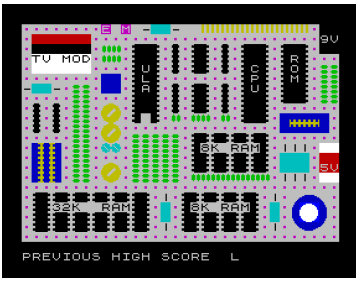
A row of staging lights counts you down, and jumping the start is a foul. Then you hold the gas (G, or the fire button) and shift with 1 to 4 or the joystick while a tachometer and a speedometer swing on screen. Accelerate too hard and engine damage builds up until the engine quits; shifting down at the right moment eases it. At the line the program gives your time to a hundredth of a second and your speed in miles per hour, and keeps a best time with your initials.

Dragmaster was made by Timex in the US, and the code carries no British credit. It uses the 2068's own keywords: STICK for the joystick and SOUND for the engine noise on the AY chip, with machine code for the gauges and sound. The idea is the one Activision's Dragster used on the Atari 2600 in 1980, where the race is won by timing your shifts, but Dragmaster adds the gauges and the risk of blowing the engine.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. Joystick or keyboard. timexsinclair.com/computer_media/dragmaster/

Circuit Board Scramble

Ken Frink / Timex Computer Corporation, 1984



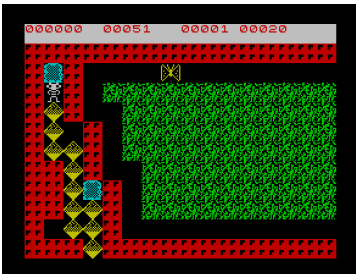
A maze game played on a drawing of a computer circuit board, racing to reach the ULA, ROM, CPU and other parts.

You move a small figure along the traces of a circuit board. The first stage is a maze against a countdown; then the game names a target part, such as the voltage regulator, the ULA, the RAM, the ROM, the CPU or the edge connector, scrolls a ticker-tape description of it across the screen, and you have to reach it before time runs out. You choose a level from 0 to 5, which sets the timer, and the timer tightens as you score. Play with the joystick or define your own four keys. There is no high-score file, so the game asks you to type in the previous best when it starts.

This is one of the few 2068 action titles made by Timex itself in the US, and a REM in the listing reads "1983 by Ken Frink". It doubles as a lesson in what is inside the computer you are playing it on, which makes it a fair counterpart to the educational titles Timex sold alongside it.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/circuit-board-scramble/

Diamond Mike II



John R. Coffey / JRC Software, 1985

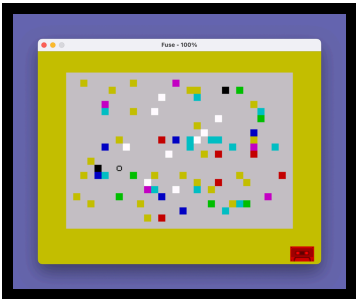
A Boulder Dash-style cave game from a one-man Indiana software house.

You steer Mike through brick-walled caves, digging through earth to collect a quota of diamonds. When you have enough the screen "pops" and you have to find the exit before the clock runs out. Rocks fall when you dig out the earth beneath them, amoebas spread through the cave, and killer butterflies patrol the tunnels. The status line shows your score, the time left, your lives and the diamonds still needed. There are 22 screens and six levels. You start with a single life and earn more after rounds 1, 3, 6, 10, 15 and 21. Play with Q, A, O and P or a joystick in the left port.

Boulder Dash was an American game, written for the Atari 8-bit computers, and this is how the idea reached TS2068 owners: from John Coffey, who sold his own programs by mail from Scottsburg, Indiana. Coffey was a prolific Timex programmer. His work includes SUPERTAPE, 45 TS1000 programs, and Compass, a BASIC compiler for the 2068. Diamond Mike II plays the formula straight, and the colour-block caves suit the 2068's attribute colour well.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load side A in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/diamond-mike-ii/

Lollipops



Warren Fricke / Time Designs, 1986

Steer a sweeping lollipop up and down through a field of coloured candies, and avoid the peppermints.

Your lollipop sweeps left and right across the screen about ten times, and Q and Z (or the joystick) move it up and down. Every coloured square it touches is a candy, and the colour is the flavour, from licorice down to lemon. Touch a bright white peppermint and the game is over. At the end it tells you how many pops you got and your score. The program reads the colour under the lollipop's tip with ATTR, so the screen itself is the game map.

Warren Fricke published it in Time Designs, the leading US 2068 magazine, in January/February 1986, as a program for children. It is short enough to read in one sitting and shows the standard user-group arcade technique well: colour attributes for collision, a string trick to flip the sprite, and STICK for the 2068 joystick. One bug: the instructions give each flavour its own value, but the scoring line adds 36 for every candy.

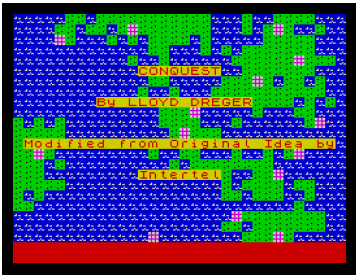
Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/lollipops/

02 GAMES: STRATEGY, ADVENTURE & BOARD

Strategy and adventure is where North American 2068 programmers did their most distinctive game work. Instead of copying UK arcade hits, they wrote wargames, board-game conversions, text and maze adventures and, at the very end, a full Empire-style conquest game. Many are in BASIC, sold by small firms or printed in Time Designs, Byte Power and user-group libraries, so they reward patience more than reflexes. Look for the ones that fill the machine: multi-part tapes, levels loaded from cassette, and the 2068's joystick ports and sound chip.

Conquest

Lloyd Dreger, 1993



A full game of world conquest: build armies, aircraft and fleets, explore a hidden 64 by 64 world and take every city before your rivals do.

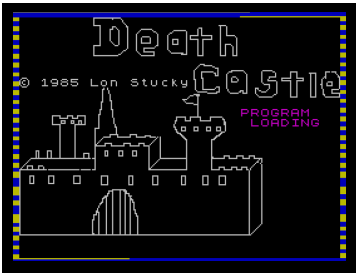
You land with a single city on an unknown planet of 50 to 63 neutral cities. Each city you hold builds the unit you choose, from armies and fighters to air and sea transports, submarines, destroyers, cruisers, carriers and battleships, each with its own strength, speed and fuel. You see only the squares your units have seen, submarines stay hidden unless the right ships are nearby, and the map wraps at every edge. Two or three players can be any mix of humans and the computer; with no humans the computers play a demonstration. Production and Ability handicaps let a beginner take on a strong computer, and there is a map editor, a random world generator, saved games and a table of commanders' wins.

Lloyd Dreger, a Wisconsin chemist, wrote Conquest late in the 2068's life: a 13 KB machine-code engine under a BASIC control program. The loading screen credits the original idea to "Intertel", probably Interstel, which published Walter Bright's Empire for home computers in the late 1980s; the unit list and the fog of war follow that game closely. Nothing else on the 2068 attempts strategy on this scale, and the site's post is a full manual.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. Load with LOAD "" and leave the tape in place, since maps and saved games are found on tape. Joystick or cursor keys. timexsinclair.com/computer_media/conquest/

Death Castle

Lon Stucky, 1985



A two-part BASIC adventure, written and sold on cassette by a South Carolina ninth-grader.

You are Marcus of the Remlin valley, riding to Death Castle after the one survivor, an old hermit, has begged you not to go. Part 1 is told a screen at a time and played by pressing the number of a choice; what you carry changes what each room offers, and there are 20 ways to die. To leave it you must decode a phrase on a medallion and type it exactly. Part 2 adds two-word commands such as GO STAIRS or SHOOT BOLTS, with timed rooms and 29 more ways to die, on the way to the castle's ruler, Hombinus. The game fills seven files on one tape, all BASIC, with a loading screen the author drew himself.

Lon Stucky of Wagener, South Carolina, was 14 when K-Power magazine profiled him and a friend for running their own school computer magazine. REMs in the listing date the work from August 1984 to 2 February 1985, with Part 2 begun on Christmas morning. It is an unusually complete piece of home-made commercial software, and the site's post has hints and a full walkthrough.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. Type LOAD "castle" and let the tape run; each part loads the next. timexsinclair.com/computer_media/death-castle/

Fall of the Third Reich

Mark L. Stueber / Sharp's, Inc., 1984

A map wargame of the last months of the war in Europe: hold Berlin for ten turns against the Allies and the Soviets.

The map of Germany and its neighbours fills the screen. You command the German panzer (P), grenadier (G) and infantry (I) units, shown in black, while the computer drives the Western Allied armies and the Soviets in from both sides in red and green. Units move one square at a time with keys 5 to 8,

each type with its own movement allowance, and rivers or occupied squares refuse the move. Units next to the enemy can attack. You win if Berlin still stands at the end of turn 10, draw if it falls on the last turn and lose if it falls sooner.

Mark Stueber wrote a series of these BASIC wargames for the 2068, also covering the Ardennes, the Eastern Front and an invasion of Britain, sold by Sharp's and distributed by Zebra Systems. A 1984 review in SINCUS News called it slow and limited, then admitted the reviewer was hooked. In the US, publishers such as SSI built whole catalogues of historical wargames for the Apple II and Atari; Stueber's series is the 2068's small share of that tradition. No original tape survives; this copy was rebuilt from a memory image on a Larken disk.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/fall-of-the-third-reich/

Minotaur

Kristian Boisvert / Byte Power, 1986

A first-person 3D maze adventure full of monsters, riddles and traps, with the Minotaur hunting you through it.

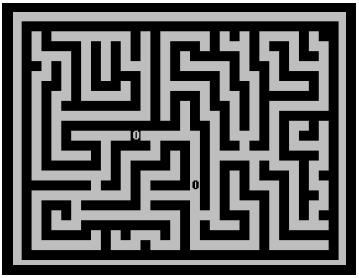
You set the maze size and a level from 3 to 5, see the map once, and then walk the corridors in a first-person view with N, S, E and W, a compass telling you which way you face. You meet treasure and swords of strength, guards, tarantulas, snakes, scorpions, phantoms and gnomes; unicorns ask riddles, phantoms make you guess a number, mirror rooms can drop you down the Endless Hole, and wishing wells can show the map again. Dynamite blows holes in walls. Each exit leads to a new maze and $100, but you win only by beating the Minotaur as many times as your level, after which he shows you the real exit.

Kristian Boisvert wrote it for Byte Power's first issue in August 1986. Unlike most of the magazine's games it is plain BASIC, about 770 lines, with the 3D corridors drawn by a handful of DRAW statements and AY music for the title. It is in the line of 3D maze games such as 3D Monster Maze on the ZX81, with far more going on in the corridors.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. The tape took about 4 minutes 15 seconds to load. timexsinclair.com/computer_media/minotaur-2/

Lost In 3D

Eric & Kristian Boisvert / Byte Power, 1987



A two-player race through a giant maze, each player in a first-person 3D view on half of a split screen.

Two players start somewhere in the same maze and try to find each other. Each half of the screen shows one player's first-person view. Player 1 uses the joystick in the left port; player 2 uses the right-hand joystick or the keys Q (forward), A (turn around), O (look left) and P (look right). The program tells each of you which way you are facing. If you are hopelessly lost, H flashes the maze map on screen for a moment, with player 1 marked by an inverse O, and R resigns. The losing player gets "You were lost hey? Too bad!"

It appeared on Byte Power's February 1987 tape (Issue 6). The editors admitted it came out "a little different than it was supposed to be", since there is no computer opponent, so you need a second person. Two independent 3D views drawn at once, in machine code, was rare on any 8-bit machine, and the 2068's two built-in joystick ports made a two-player game like this easy to set up.

Run in Browser on timexsinclair.com. There is no separate download: it is on the Byte Power February 1987 tape, which can be downloaded from that issue's page and loaded in ZEsarUX or Fuse. Player 1 needs a joystick (map one in the emulator). timexsinclair.com/computer_media/lost-in-3d/

The Crown

Brian Walker / Games to Learn By, Inc., 1983

A Rogue-like dungeon crawl across five levels loaded from tape, with the crown waiting at the bottom.

You explore room after room drawn in line graphics, fight monsters, fire arrows, search for secret doors, wade through water and collect treasure, keys and better equipment: sword, shield, helmet and armour, each in upgraded versions, plus potions, a jumping ring, a flame scroll and a teleport gem. Up to ten monster types each have their own hit dice, attack and armour. Your level rises with experience, a town sits outside the dun-

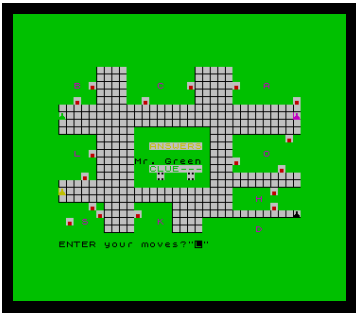
geon, and each of the five levels loads from tape as you descend. Bring back the crown and your score is doubled. It reads the joystick as well as the keyboard.

Games to Learn By was a small Connecticut and Massachusetts company with a former Timex software engineer on its staff, and The Crown was on sale in the 2068's first year. It takes the Rogue model from mainframes and minicomputers, the one Spectrum and C64 players would later meet in many dungeon games, and builds it in BASIC with a clever data format: each room is a stream of DRAW coordinates, with negative numbers switching to water or lifting the pen.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. Leave the tape running: each dungeon level loads when you reach it. timexsinclair.com/computer_media/the-crown/

Clue

Alvin Albrecht & Paul Holmgren, 1985



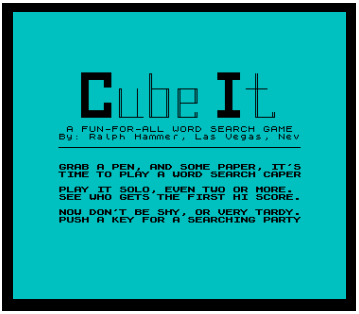
The Clue board game for two to five players, with a picture for every room and a printable detective's notebook.

The computer hides a room, a weapon and a suspect, deals the other 16 cards and gives each player a Detective Notes screen, which can also go to the printer. On your turn you roll two dice and type your whole move as a string of cursor digits; walls stop you, and doorways take you into one of nine rooms, each drawn as its own picture. There you name a suspect and weapon, the next player shows a matching card or answers none, and you may accuse. A correct accusation brings the police cars and a confession. A wrong one gets you arrested, and if everyone is arrested the computer hands out clues.

Alvin Albrecht in Canada wrote the original in 1985; Paul Holmgren, who wrote the ISTUG bulletin board software, revised it in 1989. Both versions are in the download, and Run in Browser loads Albrecht's. One known bug: if Col. Mustard or Prof. Plum solves the case, the original hangs on a blank yellow screen.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. A printer is optional. timexsinclair.com/computer_media/clue/

Cube-It



Ralph Hammer / Time Designs, 1987

A Boggle-style word game: find as many words as you can in a six-by-six grid of letters in two minutes.

The program shakes 36 letters into a grid, weighted so that common letters turn up more often, and starts a two-minute clock in minutes, seconds and tenths, with a click every second. Players write down words of two letters or more made from letters that touch across, down or diagonally, using no letter twice. When time is up the grid can be redrawn for checking next to the points table, from 1 point for two letters to 25 for six, and copied to a printer. A bold font made by a little machine code, and AY sound effects, dress it up.

Ralph Hammer of Las Vegas published it in Time Designs, the main US 2068 magazine, in March/April 1987, and it was printed again in The Hacker in 1990. It is a good party game for the computer: the machine handles the shaking and the timing, and the players keep the pencils. Redrawing the grid works by saving the random seed before mixing and reusing it, a neat trick for checking scores.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. Pencil and paper needed; a printer is optional. timexsinclair.com/computer_media/cube-it/

Starfleet 2068

Stan Lemke, 1987

Command the last armed starship of Earth Federation and defend nine star bases against waves of alien attackers.

The year is 2068 and the aliens have appeared without warning. Your ship, the Strata-Gem, moves around a navigation screen of star bases, stars and enemy ships, and when you go to battle stations a zoomed tactical screen lets you aim photon torpedoes at long range and phasers at short range. You manage shields, sensors, fuel and warp, and dock at star bases to resupply. Each wave of ten destroyed

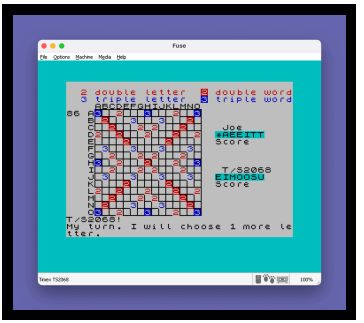
ships promotes you, through six ranks from Captain to Fleet Admiral, and every promotion shortens your time per turn and makes the enemy hit harder. The battle-stations siren and the fanfare for a kill use the AY chip.

Stan Lemke, later the author of Pixel Print, published it in Time Designs in July/August 1987; an earlier 1984 version, Star Fleet, is in the download too. It belongs to the family of Star Trek games that ran on almost every computer of the time, from mainframe originals to the TRS-80 and Apple II, but the two-screen view and real-time turn limit make it more of an action game than most.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/starfleet-2068/

Scrabble

John Leary, 1985



Scrabble for up to four players on a colour-coded board, with the full tile bag and scoring.

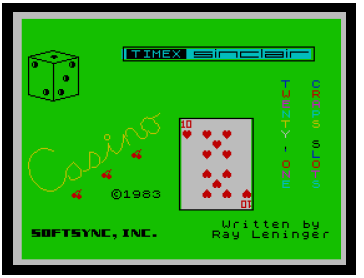
Up to four players enter their names and can draw letters to decide the order of play. The 15 by 15 board marks double and triple letter and word squares in their own colours, with racks and scores at the right. On your turn you pass, swap letters or play: give the direction, the square for the first letter and the letters from your rack, with SYMBOL SHIFT B for a blank. The program places the word, scores cross-words, adds the 50-point bonus for all seven tiles and keeps totals over several games.

John Leary dated it 16 April 1985, and it spread through the ISTUG public-domain library. There is a seat for the computer, but the routine that should play its turn is a bare RETURN, so treat it as a game for people; as a board and scorekeeper it is complete.

Run in Browser on timexsinclair.com, or load it in ZEsarUX or Fuse. Two to four players. timexsinclair.com/computer_media/scrabble/

Casino 1

Ray Leninger / Timex Computer Corporation & Softsync, 1984



Twenty-one, craps and slots on one 24K cartridge.

Plug it in and a menu offers three games. Twenty-one seats up to three players against the dealer, with splitting and doubling down. The craps table, labelled Banking Craps, takes pass and don't pass, field, hardways and one-roll bets. Slots is the third. You start with a stake and play until you break the bank or lose your shirt, and the program signs off with "Please come again". Everything is machine code in three 8K ROM chunks.

Casino 1 was one of the "Insta-load" cartridges Timex sold for the 2068's dock slot, so it starts at once with no tape. Most Timex 2068 releases were converted UK Spectrum titles; this one credits a US programmer, Ray Leninger, with Softsync as co-producer.

Run in Browser on timexsinclair.com, or download the .dck cartridge image and load it in an emulator with TS2068 dock support, such as ZEsarUX. timexsinclair.com/computer_media/casino-1/

SpaceTrader

David Anderson, 2026

A Traveller-style space trading game, with a picture of every world in Extended Color Mode.

You own a free trader with a twenty-ton hold and a twenty-thousand-credit mortgage. Twenty systems run from a high-law core to a lawless frontier, each pricing eight goods by what it exports and imports: buy cheap, jump, sell dear. Contraband pays but raises your heat, which brings inspections and pirates, and a payment falls due every eight jumps.

It plays like the menu-driven trading games of the early 1980s, with the 2068's Extended Color Mode giving each world its own picture.

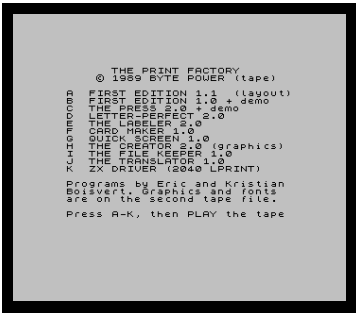
Run in Browser on timexsinclair.com, or load the TAP in ZEsarUX or Fuse. timexsinclair.com/computer_media/spacetrader/

03 GRAPHICS, ART & DESKTOP PUBLISHING

The 2068 had two screen modes the Spectrum lacked, Extended Colour and 512-pixel High Resolution, and North American programmers used both. The longer story, though, is desktop publishing: with the AERCO, Tasman and A&J printer interfaces, owners turned the machine into a newsletter press with Pixel Print and The Print Factory. User groups went further and built video digitizers. Look for programs that use the extra video modes, and expect many of the best to want a printer or other hardware.

The Print Factory

Eric & Kristian Boisvert / Byte Power, 1989



An eleven-program desktop publishing suite for pages, letters, labels, cards and banners, all run with one pointer-and-icon interface.

Every module works the same way: move an arrow with Q, A, O and P, select with SPACE, and use the FILE and PRINT menus. FIRST EDITION lays out pages of text, headline lettering and clip art; THE PRESS builds a long scrolling page that can take in whole screens and pictures; LETTER-PERFECT writes letters; THE LABELER, CARD MAKER and QUICK SCREEN make labels, four-panel greeting cards and single screens; and THE BANNER PRINTER prints long sideways banners. THE CREATOR draws the clip-art libraries, THE FILE KEEPER sorts them and THE TRANSLATOR turns icon files into designs. The download includes the original graphics disk, 13 fonts and dozens of extra clip-art libraries.

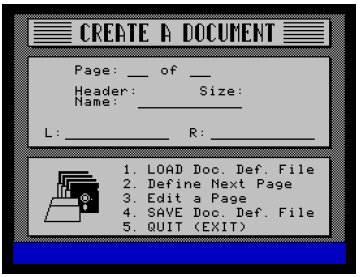
Eric and Kristian Boisvert, who had spent three years writing games for their Byte Power tape magazine, released it in 1989. SINC-LINK and the Sinclair Desktop Publishing Journal reviewed it and its add-ons several times, and ran tips such as driving it with a Kempston mouse. It plays the part Broderbund's Print Shop played on the Apple II and Commodore 64, with a page layout program added, and the shared interface makes it easy to learn.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. The program tape opens with a menu that loads any module. Printing needs a printer interface; the T/S 2040 is

supported in some modules. timexsinclair.com/computer_media/the-print-factory/

Pixel Print Professional

Stan Lemke / Lemke Software Development, 1990 (Larken edition)



The best-known North American desktop publishing package for the 2068: columns of text and graphics, fonts, icons and near-letter-quality printing.

Pixel Print builds a page out of columns. You type straight into a column in a choice of fonts, load SCREEN$ pictures and icons into it, and move, copy and erase blocks of pixels; then Create a Document assembles columns into pages and Print a Document prints them in draft or near-letter quality. The Professional edition adds a converter that turns Tasword and MScript files into columns, in newsletter or 64-column style, a pixel art editor, single-page printing and a printer customizer. This Larken edition was adapted in 1990 by Larry Crawford, Bob Mitchell and George Chambers of the Toronto club to use the Larken RAMdisk, and runs from a BOOT menu.

Stan Lemke of Wichita, Kansas, wrote Pixel Print in BASIC and compiled it with TIMACHINE, taking it from versions 1 and 2 (1987) through PLUS! (1988) to Professional, and published a newsletter, Pixel Print Press, for its users. The Professional edition first used the extra 64K of an AERCO disk system to hold a second column; working one column at a time is what let a 2068 lay out a newsletter at all.

The Professional edition needs a TS2068 with the Larken disk interface and a RAMdisk, and has not been converted to tape. To try Pixel Print without disk hardware, use the tape editions Pixel Print v2.0 or Pixel Print PLUS!, both of which Run in Browser on timexsinclair.com. timexsinclair.com/computer_media/pixel-print-professional-v5-01-larken-edition/

Pixel Sketch and Graphic Editor

Stan Lemke / Lemke Software Development, 1985

A graphics editor that works in all three of the 2068's screen modes, including the 512-pixel high-resolution mode the Spectrum never had.

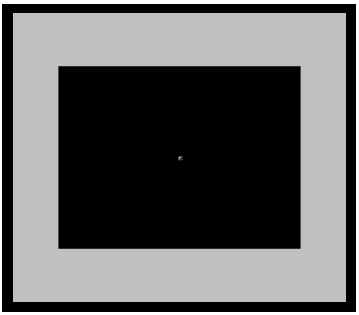
At start-up you pick Standard, Extended Colour or High Resolution mode; high-res loads an extra block of machine code. Then you draw with the joystick or keys, and a two-column menu of fourteen functions offers block copy, erase, rotate and mirror, inverse, a wide view, zoom, circles and arcs, fill with your own 8-bit shading patterns, and a digitize tool that reads a block of the screen and shows its bytes enlarged. A connect mode draws lines between successive cursor positions. Screens can be saved, loaded and merged, text added in four loadable fonts, and pictures printed on a 2040 or a full-size printer.

Lemke wrote it in 1985, before Pixel Print, and it shows the same approach: BASIC menus over nineteen machine-code routines. Its value today is as a tour of the 2068's video hardware. Extended Colour mode gives every 8 by 1 pixel strip its own ink and paper, instead of every 8 by 8 cell, and High Resolution doubles the width to 512 pixels. Spectrum art programs could not do either.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. A joystick is easiest. timexsinclair.com/computer_media/pixel-sketch-and-graphic-editor/

Draw 512

William McBrine / McBrine Computer Products, 1989



A drawing program for the 2068's full 512 by 192 high-resolution screen, with two picture buffers and mirror, flip and scroll.

You draw in monochrome at 512 by 192, or at the standard 256 by 192, with the cursor keys or a Timex or Kempston joystick. Single keys switch between plot, unplot and over, and draw lines, circles, boxes and filled boxes; others mirror, flip, invert and expand or compress the picture. Holding CAPS SHIFT with a direction scrolls the whole picture a pixel at a time. Two memory buffers hold extra screens, which you can swap with the display or combine with it by OR, AND and XOR. Pictures move between the narrow and wide modes, save as screen files, and print on a TS2040 or, in two sizes, an Epson-type printer.

William McBrine of Salisbury, North Carolina, released it as shareware with a suggested $10 donation. Version 1.1 added load and save in the run-length-encoded picture format that modem users were trading at the time, which links it to the 2068's bulletin-board scene. Wide mode works on the 2068's two interleaved display files, a capability the Spectrum lacked, and Draw 512 is one of the few programs built entirely around it.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. The download has v1.1 and v1.0, a sample wide picture and McBrine's manual. timexsinclair.com/computer_media/draw-512/

ZebraPainter 1.4

Zebra Systems, Inc., 1984

The paint program that came with Zebra's graphics tablet, built for the 2068's Extended Colour mode.

ZebraPainter was the software for the Zebra Graphics Tablet, a KoalaPad touch tablet with a Zebra interface for the 2068. You draw with the stylus in pen strokes one pixel wide or brush strokes five pixels wide, choose ink, paper and border colours, and pick commands from an on-screen menu by pointing at them. Lines and circles are drawn between two points you set, drawing can be locked to horizontal or vertical, and typed commands add text, copy the screen to the 2040 printer, and save or load screens on tape. Two pictures stay in memory at once, and you can store, restore or exchange them.

Zebra Systems of New York was one of the main US suppliers of 2068 hardware and software. ZebraPainter uses Extended Colour mode, so colour can change every 8 by 1 pixel strip rather than every 8 by 8 cell, and the tablet was the same KoalaPad sold for the Apple II, Atari, Commodore 64 and Tandy machines. Reviewers in 1985 found it easy to use but noted stray marks from the stylus that had to be cleaned up.

Download from timexsinclair.com, or Run in Browser on timexsinclair.com. It was written for the Zebra Graphics Tablet; without the tablet, or an emulator that imitates it, you can load it but not really draw with it. timexsinclair.com/computer_media/zx-painter-1-4/

Pix Fix

John T. Nguyen, 1985

A pixel editor that lets you zoom in on any part of the screen and set or clear individual dots.

Pix Fix has two modes. Big Pix shows an enlarged grid of the area under the cursor, where you move with I, J, K and L and set or clear single pixels; the border colour tells you whether you are drawing, erasing or just moving. Screen Mode shows the whole 256 by 192 picture with a box marking the area you are editing, and CAPS SHIFT with the same keys pans the box a pixel or a character at a time. Pictures can be saved as an ordinary SCREEN$ or as code, and you can save just the top third or two thirds of the screen to save tape. Built-in help pages explain the keys.

John T. Nguyen published it in SyncWare News at the end of 1985, where an editor's note compared it to MacDraw, and it went into the CATS library. It was still being reviewed in SWYM and SINC-LINK in 1990 and 1991, which says a lot about how useful it stayed. For touching up a title screen or a digitized picture, it is the tool 2068 users kept reaching for.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/pix-fix/

Artworx

David C. Ridge / NovelSoft, 1985

A full drawing program with brushes, spray, fill and shapes, plus a Gallery program that shows your pictures as a slide show.

Artworx draws with brushes, spray and fill, and gives you circles, arcs, ovals, lines, rays, boxes, triangles and dots, with text in four styles: normal, bold, ultra and italic. Parts of a picture can be moved, copied, turned, magnified, reduced, flipped or erased, and a colour brush paints ink, paper, bright and flash. The cursor speeds up the longer you move in one

direction. The download includes GALLERY, which shows saved pictures one after another, and a later 1986 Artworx Gallery with five sample pictures and a menu to build and save a show.

NovelSoft, the Canadian firm that also sold the TIMACHINE compiler, published it. Artworx was reviewed in T-S Horizons in 1985, and Byte Power's 1986 review of version 1.1 called it a program not to miss, though it found the fill only works in black and text is placed by character cells. Club newsletters ran articles on using it for cartoons and on dumping its screens to an AERCO printer interface.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. A joystick is easiest. timexsinclair.com/computer_media/artworx/

Videotex and Video 3-D (S.M.U.G. Video Digitizer)

John McMichael / S.M.U.G., 1989

Software for a home-built video digitizer: capture pictures from a camera, turn them into four-level greyscale, and render them in pseudo-3D relief.

The disk drives the S.M.U.G. black-and-white video digitizer board. Its menu runs three programs. Eye By Night captures images, setting the board's sync and threshold. Videotex takes four scans of the same picture at different brightness thresholds, stores them as a 24K master file and combines them into a greyscale image, with a grey-level slider, invert, flip, filter, overlay and small or full-page printing on a dot-matrix printer. Video 3-D turns a master file into a relief picture, with a choice of depth and optional colour.

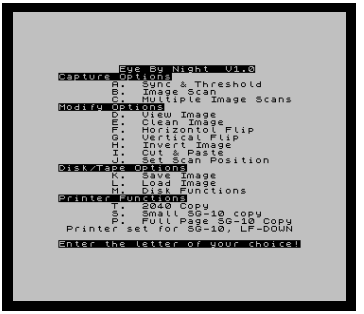
This is North American hobby hardware at its most ambitious: a club-designed board on the expansion port, feeding software that wrings shades of grey out of a two-colour screen. SINC-LINK reviewed Videotex three times between 1990 and 1992, and SMUG Bytes printed a full walk-through from camera to printed page. Commercial digitizers such as ComputerEyes did the same job on the Apple II and Commodore 64; here a user group did it with a home-made board.

Download from timexsinclair.com. It needs a TS2068 with the Larken disk interface and has not been converted to tape; capturing needs the digitizer board. The download includes three sample captures that load into Videotex and Video 3-D

without the board. timexsinclair.com/computer_media/videotex-and-video-3-d-s-m-u-g-video-digitizer/

Eye By Night

Toronto Timex-Sinclair Users Club / SINC-LINK, 1987



The capture program for the video digitizer that the Toronto club published as a build-it-yourself project in SINC-LINK.

SINC-LINK printed the circuit, eleven chips and a transistor on a board for the expansion port, in its January/February and March/April 1987 issues. Eye By Night runs it. The Capture menu sets the board's sync and threshold, takes a single scan or keeps scanning until you press a key. The Modify options view, clean, flip, invert and cut and paste the picture and adjust the scan position. Pictures save and load as SCREEN$ files and print on a 2040 or, small or full page, on a Star SG-10.

Curt Carlson of the Mile High chapter in Denver ordered a board and the software in 1988, built it from local parts and wrote a three-part series on using it in 1991. The program carries no author's name. It is the start of the line that led to the S.M.U.G. board and Videotex above, and a good example of a user group designing hardware, publishing it and supplying the software.

Download from timexsinclair.com or Run in Browser on timexsinclair.com. Without the digitizer board you can only explore the menus; capturing a picture needs the hardware on the expansion port. timexsinclair.com/computer_media/eye-by-night/

Greeting Card Designer

Zebra Systems, Inc., 1985

Design and print folded greeting cards, front and inside, on an 80-column printer, with icon and banner designers included.

The screen becomes the page you are working on. You type your text with full cursor control, in solid or outline lettering and two sizes, left, right or centred; choose one of eight borders; and

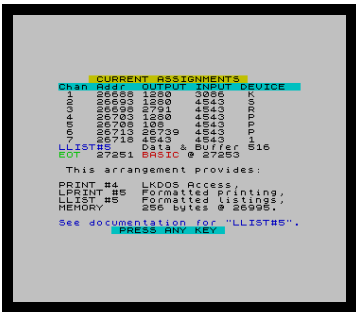
mark where graphics go on a grid, small or large. The library has 22 pictures, among them a Christmas tree, Santa, a pumpkin, a heart, cupid, a rose, a cake, a cat, a whale, a sailboat and a baseball, and the Graphics Designer lets you draw your own on a 32 by 56 dot grid. A Banner Designer prints text between two pictures. You choose how many copies; the card prints as one sheet that folds into front and inside.

Zebra Systems built in drivers for Epson, Gemini, Memotech, Seikosha and Prowriter printers on AERCO, Tasman and A&J interfaces, the parallel interfaces 2068 owners actually bought. SUM praised it in 1986 as simple to use. It is the 2068's nearest thing to the greeting-card part of Broderbund's Print Shop, released a year after that program.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. You can design cards on screen in an emulator; printing needs one of the supported printers and interfaces. timexsinclair.com/computer_media/greeting-card-designer/

WIDJUP Mandelbrot Plotter

William J. Pedersen / WIDJUP Co., c. 1990



Turns a dot-matrix printer into a plotter for the Mandelbrot set, printed in strips you paste into a poster.

You choose small frames of 64 by 44 cells or large ones of 144 by 144, then give the left edge, the top and bottom of the region and the number of frames per strip, while a small map of the set shows the area you have picked. The program computes each frame, shows it on screen in 17 shades built from user-defined characters, and prints it through its own printer module. Strips of frames are meant to be pasted together into one large picture.

Bill Pedersen of Michigan sold hardware and software under the WIDJUP name and wrote a series of articles about his projects. A Denver club report from 1991 called the sample Mandelbrot printouts impressive. The heavy arithmetic is a 137-byte machine-code routine; BASIC steps through the cells. Fractal plotting was a favourite showpiece on every home computer after Scientific American's 1985 article on the Mandelbrot set, and this is the 2068's printer-sized answer.

Download or Run in Browser from timexsinclair.com. Needs an Epson-class printer on a Tasman, AERCO/Oliger, A&J or Z80 PIO interface; without one it stops at the first print. timexsinclair.com/computer_media/widjup-mandelbrot-plotter/

04 MUSIC, SOUND & SPEECH

Sound is where the 2068 most clearly beat the Spectrum: Timex added a three-voice AY-3-8912 chip and a SOUND command to BASIC, while the 48K Spectrum had a one-channel beeper. North American authors used it for synthesizers, sound-effect editors and three-part music, and some went further into speech, both played back and recognized. Look for programs that teach you the chip while they play, and note that the speech programs often depended on extra hardware.

Musician Royal

Oleg D. Jefimenko / Electret Scientific Co., 1986

A music editor that takes notes by name, shows them on a staff and plays them back, with key signatures and tempo changes.

You enter a tune note by note as a letter, an octave and a length, and the program applies the key signature for you, up to seven sharps or flats. A piece can change tempo up to nine times and holds about 1,500 notes. Edit mode changes, inserts and deletes notes, and a duplicate mode copies repeated passages. The staff display draws the notes on treble or bass clef. Playback can be transposed, and a finished piece can be saved as a melody file or as a self-playing BASIC program, or printed as DATA lines for use in your own programs. The download adds Music Album and Music Box, two players for saved compositions.

Oleg Jefimenko was a physics professor in West Virginia and sold his programs through his own company, Electret Scientific. Time Designs called Musician Royal one of the most complete music programs for the 2068 in 1986. It is a single-voice BEEP program, so the interest is in the notation rather than the sound; for that, pair it with the AY programs below. Musician Royal Demo, also on the site, shows what it can play.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/musician-royal/

Music Design 2000

James Edwards / Arrow Software, 1987

Turns the 2068 into a small keyboard synthesizer: an automatic rhythm section on the sound chip, with you playing the solo.

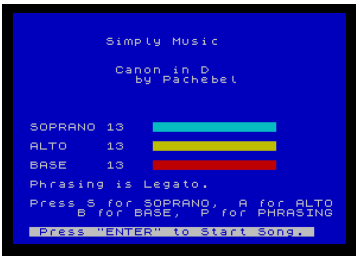
The number keys choose the chord the rhythm section plays, C through B, and the letter keys are laid out as a piano keyboard for the solo line, which lights up on screen as you play. Five rhythms are built in (Country, Waltz, two Rock patterns and Latin), and keys set the solo volume, tempo and note length. Everything you play can be recorded, about 1,100 notes and pauses in all, and played back with the notes and chords shown. Songs are kept as a library, saved with the program, and a demonstration song is ready when it loads.

James Edwards wrote it for Arrow Software, and RMG Enterprises of Oregon City sold it. The AY-3-8912 sound chip, with three voices, was the 2068's clearest advantage over the 48K Spectrum, which had only a one-channel beeper, and Music Design 2000 is the program that uses it most like an instrument. Casio's home keyboards of the same years did much the same job with auto-rhythm and one-finger chords.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. The manual's keyboard guide is on the site as Music Design 2000 manual. timexsinclair.com/computer_media/music-design-2000/

Simply Music

Stan Lemke / Time Designs, 1986



Pachelbel's Canon in three voices on the AY sound chip, with a volume control for each part.

The program reads soprano, alto and bass parts of Pachelbel's Canon in D from DATA and plays them together, each voice on its own channel of the sound chip. While it plays you can raise each part's volume with S, A and

B, shown as coloured bars, and P switches the phrasing between legato, where notes run into each other, and detached. A small animated marker pulses as the music runs, and at the end it offers to start again.

Stan Lemke, author of Pixel Print, published it in Time Designs in November/December 1986. It is short enough to read, and that is the reason to try it: a BASIC loop that keeps three voices in step with its own countdown timers and one SOUND statement, with no interrupts or machine code. Anyone who wants to write three-part music for the 2068 can learn the whole method from it, and hearing the parts move independently shows what the Spectrum's beeper could not do.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/simply-music/

MUSIprint

Eric Boisvert / Byte Power, 1988

A small machine-code utility that plays music written as text in LPRINT statements.

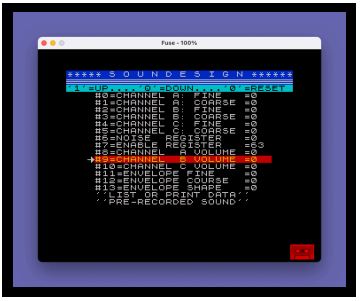
Once MUSIprint is switched on, a line such as LPRINT "t10 o3 -c1 b+1 +a-2 p3" plays as music instead of going to the printer. t sets the tempo, o the octave, a - or + before a note drops or raises it an octave and after it makes it flat or sharp, p is a rest, and the number after each note is its length. The tape has a customizer that loads the 540-byte code at any address you choose, plays a test scale and saves the relocated code for use in your own programs.

Eric Boisvert published it, not copy-protected, on Byte Power's February 1988 tape, and the magazine notes that it works on the Spectrum too. The idea of a music language in strings is the one Microsoft BASIC's PLAY statement used on the IBM PC and MSX, brought to Sinclair BASIC through the printer channel. With MUSIC Demo and MUSIcomp it was part of Byte Power's music tools.

Run in Browser on timexsinclair.com, which loads MUSIC Demo playing five tunes with it, or download it from timexsinclair.com and load it in ZEsarUX or Fuse. timexsinclair.com/computer_media/musiprint/

Soundesign 2068

James Edwards / Arrow Software, 1986



An editor for all 14 registers of the 2068's sound chip, with ready-made effects that print the SOUND statement that made them.

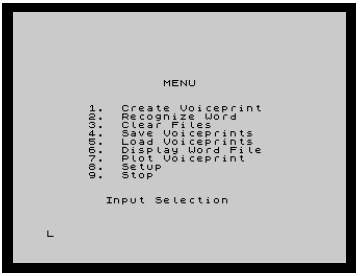
The main screen lists the 14 registers of the AY-3-8912: tone for three channels, noise, the mixer, three volumes and the envelope. Move to one, step its value up or down by 1 or 5, and hear the result. A menu of pre-recorded sounds offers a gun shot, explosion, ping, train and steamboat whistles, a bell, an organ chord and a helicopter, and an advanced menu adds moving effects such as a transporter, a falling bomb, warp drive and phaser fire, which sweep registers in loops. After each sound the program shows, and can print, the SOUND statement or BASIC lines that produce it.

That last feature is what made it useful: you could find a sound by ear and copy the statement straight into your own program. The 2068's SOUND command takes raw register numbers, so finding a sound by ear and then copying its numbers was the quickest way to get effects into a program. Rheesware's Sound Experimentor did a similar job. One small bug: the jet engine preset does not respond reliably to its key.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. A printer is optional. timexsinclair.com/computer_media/soundesign/

SRS2000 Speech Recognition System

Brad Bennett / Advanced Interface Designs, 1984



Teach the 2068 up to eight spoken words, then have it recognize them.

You speak a word into a microphone, the program stores a voiceprint of it and gives it a label, and you repeat for up to eight words. In recognition mode you speak again and the program reports which word it heard, or none. You can set how strict the match

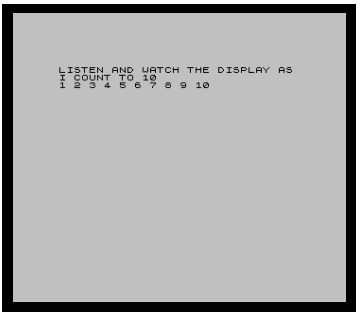
must be and how long each sample lasts, save and load a set of voice-prints on tape, and plot a frequency chart of a sample as a bar graph. Machine code does the sampling and matching.

Brad Bennett first described a voiceprint recorder for the 16K TS1000 in SYNC, then sold SRS1000 and this SRS2000 through G. Russell Electronics, with a speech amplifier unit, a program and documentation. Speech recognition on an 8-bit home computer without special chips was rare on any platform, and this is a practical small-vocabulary version of the idea.

Download from timexsinclair.com, or Run in Browser on timexsinclair.com to see the menus. Recognizing speech needs a microphone and the SRS amplifier unit plugged into the computer, so it cannot really be tried in a browser. timexsinclair.com/computer_media/srs2000-speech-recognition-system/

Speech Synthesizer

Tad Painter, 1984



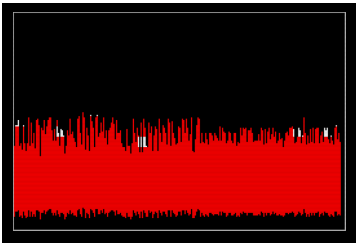
Software speech for the 2068: it plays back libraries of digitized words, with no speech chip required.

The demonstration counts from one to ten and speaks direction words while lines are drawn on screen, then lets you type a sentence as a list of word numbers to hear it spoken. Each word is a recorded sample stored in a library in high memory. The library compiler lets you pick the words you need from one or more libraries and merge them into a single compact file for your own programs, which call the speech routine with a word number. A word list for the 2068 library is on the site.

Tad Painter produced speech products for the TS1000 and 2068; QuarTerS reviewed the TS1000 version in 1985 and this one in 1986. Playing back words needs no extra hardware, unlike the speech-chip add-ons from Zebra and others. Recording new words used his HS68 digitizer and the HS68 Driver editor, also on the site. The same approach, digitized samples played through the computer's own sound output, was used by software speech on the Apple II and C64.

Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/speech-synthesizer/

Audioscan



Author unknown; published in SIN and ZX-Appeal, 1986

Shows the sound coming into the EAR socket as a moving graph on screen.

An 18-byte machine-code routine samples the EAR input and returns a level, and the program plots one sample per pixel column across the screen, then starts again. You choose a line graph, a bar graph or points. Space freezes the display, and from there you can return to the menu, resume or stop. Plug in a tape recorder or other audio source and you can watch speech, music or a program tape as a rough waveform.

The site has no author's name for it. The earliest copy is in Réal Gagnon's French-language Quebec newsletter SIN in January 1986; the listing on the site is the one from ZX-Appeal in July/August 1986, and THE RAMTOP, The Plotter and LIST reprinted it. Five appearances for a short program says it was a favourite type-in. It is a good first look at how the 2068 reads its tape input, and at what a dozen bytes of machine code can add to BASIC.

Download from timexsinclair.com and load it in an emulator, or Run in Browser on timexsinclair.com. It needs a sound source on the EAR input to show anything; in an emulator, playing a tape file gives it a signal. timexsinclair.com/computer_media/audioscan/

Musical Christmas with TS 2068

Oleg D. Jefimenko, 1985

Three Christmas songs played on the 2068, from a menu.

A title screen, then a table of contents: Silent Night, Jingle Bells and Joy to the World. Pick one by number and the program plays it with BEEP, from notes and lengths stored in DATA, with rests between phrases. When it ends you can play it again, play it continuously or go back to the menu.

Musically it is simple, but it travelled further than almost any other 2068 music program. Oleg Jefimenko adapted it from his book of music programs for the 2068, and in December 1985 it ran in at least five newsletters, among them The Sinc Times, THE RAMTOP, LIST and Timelinez, and went onto SINCUS Exchange Tape 105. The listing is a tidy model for anyone storing tunes in DATA: the end of each song is found by catching the out-of-data error, and dotted notes are written as fractions such as 8/3 right in the DATA lines.

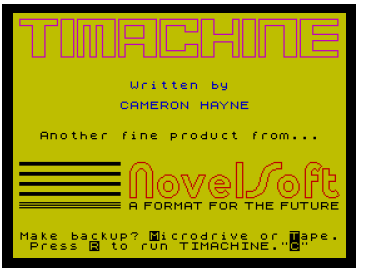
Run in Browser on timexsinclair.com, or download it from timexsinclair.com and load it in a TS2068 emulator such as ZEsarUX or Fuse. timexsinclair.com/computer_media/musical-christmas-with-ts-2068/

05 PROGRAMMING LANGUAGES, COMPILERS & BASIC EXTENSIONS

The 2068 shipped with a better BASIC than the ZX81 and hardware the Spectrum lacked: a second screen, a 512-pixel mode and bank-switched memory. North American programmers spent the next decade building tools to reach those features from BASIC, plus a compiler, a Forth and a run of assemblers. Look for programs that put the extra hardware within reach of an ordinary BASIC program.

TIMACHINE

Cameron Hayne / NovelSoft, 1986



A BASIC compiler from Toronto that handles floating-point maths as well as integers.

Load TIMACHINE, then load or type your BASIC program and run it as usual. Add a REM ! OPEN # line, type *C, and it compiles nearly all of Sinclair BASIC into machine code, including user-defined functions, two-dimensional arrays and string arrays. REM ! directives such as !INT mark variables as integers so that loops and counters run at integer speed while the rest keeps full floating point. A trace mode lists every variable and its type while the BASIC version runs. The tape had both 2068 and Spectrum versions, a 52-page manual and six worked examples, all on the download.

Most Sinclair compilers of the day, such as ZIP, compiled integers only. TIMACHINE let you keep real numbers and trig where you needed them. Larry Kenny's 1991 test found trig-heavy code only modestly faster, so the big gains come from integer work. Time Designs called it the best compiler its reviewer had seen for the Sinclair Z80 machines, and Bob Mitchell and others shipped compiled utilities with it into the 1990s.

Run in Browser on timexsinclair.com, or download the tape and load it in ZEsarUX or Fuse. It runs on a standard 2068 and leaves about 27K for your BASIC program. timexsinclair.com/computer_media/timachine/

Hot Z 2.51

Ray Kingsley / Sinware, 198x

A machine-code monitor, disassembler and line-by-line assembler that can look into every 2068 memory bank.

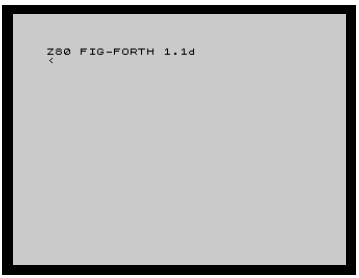
Hot Z has four modes: read (a labelled disassembly), assemble, hex edit and single step. The single-stepper shows registers, flags and the stack as each instruction runs, and you can set two breakpoints. The assembler inserts and deletes code on the fly. Common addresses get four-letter names, built in or your own, and Hot Z can show the ROM's floating-point calculator code as data. It also does hex arithmetic, block moves and compares, prints to the TS2040, and loads ZX81/TS1000 tapes. The tape version runs from the HOME, DOCK or EXROM bank, and it can disassemble any of them.

Hot Z began on the ZX81 and followed its users to the 2068, where it became the standard machine-code tool in North America. It fills the role HiSoft's monitor and assembler filled for Spectrum owners in Britain. The download includes the EXROM build, an AROS cartridge image and the later version 2.56.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. It needs a stock 2068; the site also has the user notes and command list. timexsinclair.com/computer_media/hot-z-2-51-tap/

2068 fig-Forth

Ed A. Worden / Hawg Wild Software, 1985



The full fig-Forth 1.1d language for the 2068, with a screen editor and tape words.

The loader asks for COLD, WARM or BASIC and drops you at the Forth prompt. Everything in the fig-Forth model is there, including <BUILDS ... DOES>, vocabularies and block buffers, plus an editor for screens of 16 lines by 64 characters. Worden added TAPE-SAVE, SCR-SAVE, SCR-LOAD and BYE to get back to BASIC. Forth hands its input and output to a resident BASIC program, which also gives it PLOT,

DRAW, CLS, COPY, colours, BEEP and the ROM's trig and log functions. A second tape file holds screens with the error messages and a small hex loader.

Hawg Wild of Little Rock, Arkansas, had already sold a Forth for the TS1000 and ran a newsletter for its Forth customers. If you have used the Jupiter Ace, the British machine with Forth in ROM, this is the 2068's way into the same language, and Worden's own published monitor rewrite and decompiler show people built on it.

Run in Browser on timexsinclair.com, or download the cassette image and load it in ZEsarUX or Fuse. A stock 2068 is enough; the 1984 manual is on the site. timexsinclair.com/computer_media/2068-fig-forth/

ZEBU: Zunk's Extra Basic Utilities

Larry Zunk / Zunk Custom Electronics, 1988

Thirty-eight new commands and editing keys for 2068 BASIC, with a demo that shows each one.

ZEBU sits at 60000 and you call it with RANDOMIZE USR 60000 followed by a REM holding the command, written with ordinary BASIC keywords. It adds 16-bit PEEK and POKE, block moves with bank switching, hex, binary and 16-bit AND, OR and XOR, line joining and searching, four text sizes, a 64-column font and alternate character sets. In the editor you get up and down arrows and quicker deletes. The demonstration program runs each command and then LISTs the line that did it, so you see the exact syntax, and it has thirteen help pages.

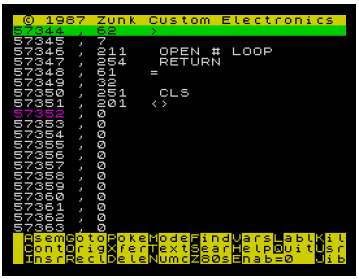
Spectrum owners had Beta BASIC and similar extensions. ZEBU is a 2068 equivalent that knows about the machine's banks: COPY and MOVE can swap the screen into dock RAM and back. It is one of the more complete BASIC toolkits from the late North American scene.

Run in Browser on timexsinclair.com, or download it and type LOAD "" in ZEsarUX. It runs on a stock 2068; only COPY and MOVE need RAM in the dock bank. timexsinclair.com/computer_media/zebu-zunks-extra-basic-utilities/

Zunk Assembler

Larry Zunk / Zunk Custom Electronics, 1987

A Z80 assembler for people who would rather work in decimal than hex.

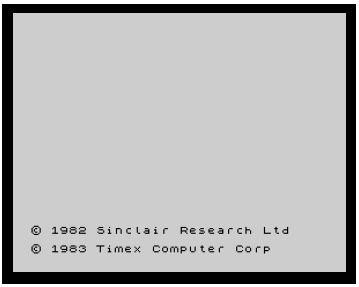


Type a mnemonic with decimal numbers and press ENTER; the line is assembled into memory at once and the listing above shows the result as a disassembly, with your labels and system-variable names such as CHADD in place of numbers. Labels start with the pound sign, JR and DJNZ offsets are worked out for you, and Insert moves code down and fixes up the relative jumps. If you forget a syntax, Search lists every form of an instruction that matches. Xfer moves a block between memory banks, a relocate key rewrites CALLs and JPs for a new address, and a converter handles hex, decimal and binary.

Most assemblers of the time, Hot Z included, assumed you thought in hex. Zunk's assumes you know BASIC numbers and want to see the code as you build it, which makes it a friendly first assembler. It leaves 57344 upward free for your code.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. It runs on a stock 2068. Save your code and labels before testing, as the help warns there are no error traps. timexsinclair.com/computer_media/zunk-assembler/

Dual Screen Mode Support



V. Carole Corcoran / Timex Computer Corp., 1984

Timex's own library routine for using the 2068's second display file from BASIC.

The 2068 has room for a second screen at 24576, and this machine-code module lets a BASIC program use it. You can print text to either screen, clear or scroll a range of lines, read back characters and colours, copy or swap lines between the two screens and choose which one is showing. The demo draws a help page on screen 2 while you look at screen 1, then flips to it instantly. The code was rebuilt from Timex's assembler listing (Application Development Library, ASC No. 004, February 1984), with every instruction checked against its printed bytes.

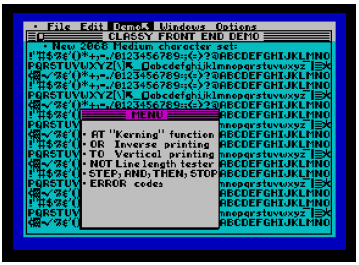
This is Timex's Connecticut staff writing tools for developers, and a direct look at hardware the 48K Spectrum did not have. The download includes the original module and a patched version that fixes four bugs, and the

site's write-up explains every call.

Run in Browser on timexsinclair.com (the demo), or download the three tapes and load them in ZEsarUX. Load the module with CLEAR 57343: LOAD "dualscreen" CODE 57344 on a stock 2068. timexsinclair.com/computer_media/dual-screen-mode-support/

JazzoFire

Paul Bingham, 1988



A graphics designer, a proportional-font printer and a windowing kit for BASIC programs, from an Arizona programmer's magazine series.

Three programs share the tape. UDG+ lets you draw four 8x8 characters at once with a pixel cursor and store them as UDGs or as replacement letters for a whole font. Classy Front End (cfe/mc) is machine code that prints text in a proportionally spaced font with kerning: put the text in a REM and call RANDOMIZE USR. Its demo is a highlighted pull-down menu. Windows & Portholes draws shadowed rectangular windows and round 'portholes' for status messages.

Bingham explained each part in Time Designs, from a 1986 UDG designer through a four-part Classy Front End series and two articles on windows in 1988, so you can read how it works as well as run it. Proportional type and windows on a 1983 home computer were unusual, and this is the North American scene's most complete attempt at a graphical front end for BASIC.

Run in Browser on timexsinclair.com, or download the tape and load it in ZEsarUX or Fuse. A stock 2068 is enough. timexsinclair.com/computer_media/jazzofire/

Sprites 2068

Ron Ruegg & C. Vernon Tidwell / Zebra Systems, 1986

A machine-code sprite engine driven from BASIC by short command strings.

Put commands in C$ and call USR 60160: I sets the number of sprites, C creates one from UDGs, P places it, M moves it, E erases it, O tests two for overlap and H and V scroll the screen. Several commands can go in one string, so a single call can move a whole group. Up to 24 sprites of any size can be on screen, with wraparound and colli-

sion detection returned to BASIC. The demos include a walking character, a five-ball motion study, mice, a dripping faucet and a steam locomotive scene with whistle and bell. SPRITEDRAW lets you design your own and save them.

The package is the sprite code from Appendix C-5 of the 2068 Technical Manual, debugged by Ruegg and Tidwell. The 2068 has no hardware sprites the way the Commodore 64 does, so this is how you got moving characters from BASIC without writing machine code.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse. A stock 2068 is enough; the manual and a disassembly are on the site. timexsinclair.com/computer_media/sprites-2068/

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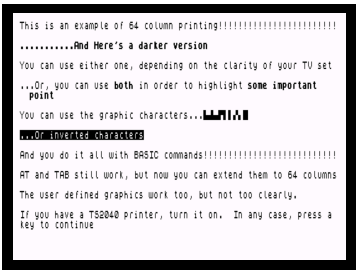
64 Column BASIC

Wes Brzozowski / ISTUG PD Library, 1985



A small driver that makes ordinary PRINT statements use the 2068's 64-column mode.

Run RANDOMIZE USR 60000 and PRINT, AT and TAB work across 64 columns, with block graphics, UDGs and INVERSE. Brzozowski redefined the colour words, since the mode allows only one ink and paper pair for the whole screen: INK picks the pair, BRIGHT 1 prints bold characters that are easier to read on a TV, FLASH clears the screen and PAPER copies it to the TS2040 printer, left half then right half. The demo walks through each feature with the author's own comments.

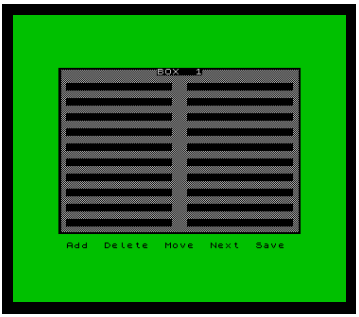
Timex's Technical Manual had 64-column routines, but they were awkward to use from BASIC. This driver hooks the screen channel instead, so existing programs need few changes. The Spectrum has no 512-pixel mode, so 64 columns there meant squeezing 4-pixel characters into 256 pixels; the 2068 has full 8-pixel characters. It took second place in a SyncWare News contest and was the only entry the judges chose unanimously.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. Needs a stock 2068; the printer option needs a TS2040. timexsinclair.com/computer_media/64-column-basic/

06 DISK SYSTEMS, UTILITIES & PRINTER SUPPORT

Timex never shipped a disk drive or a full-size printer interface for the 2068, so North American owners bought them from small firms: AERCO, Oliger, Larken, Zebra, A&J and Tasman. Most of the software in this section exists to make that third-party hardware easier to live with, from menu shells for the Larken DOS to drivers that made LLIST work on an Epson. Look for the programs that solved a daily annoyance, and expect some of them to need the hardware they were written for.

LogiCall (Larken Edition)



Bob Swoger, K9WVY / Gator Software Development, 1990

A menu shell for the Larken disk system: pick any file from the catalogue with the arrow keys and press ENTER.

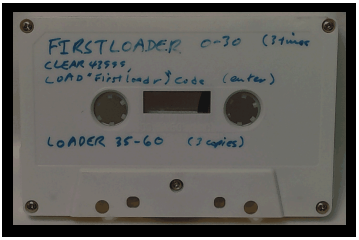
Boot the disk and LogiCall shows the catalogue with a Program? prompt. Move the highlight to a file and ENTER loads it the right way: BASIC programs run, SCREEN$ files are shown, Tasword and other text files appear in 64 columns, and code files load. Single keys replace the long LKDOS commands that otherwise start with RANDOMIZE USR 100 or PRINT #4: E erases, F formats, M moves, R checks a file's CRC, and 0 to 4 switch drives. W and T call up the word processor and terminal program on the disk. The disk also carries Swoger's utilities, among them a head step-rate repair, an MS-DOS text file importer, a TS2050 phone dialer and VU-CALC printing and conversion tools.

Swoger modelled LogiCall on MASS-11, the menu-driven office suite he had used on DEC minicomputers. It became the most written-about 2068 utility on the site, with reviews and the author's own explanations from 1990 to 1996, and the site has a video of him demonstrating it.

Download from timexsinclair.com. It needs a TS2068 with the Larken disk interface and LKDOS; the download holds every file from the disk as a TAP. It has not been converted to run from tape. timexsinclair.com/computer_media/logicall-larken-edition/

First Loader

David Ornstein & David Solly, 1987



Reads a ZX81 or TS1000 program straight off its original cassette and rebuilds it as 2068 BASIC.

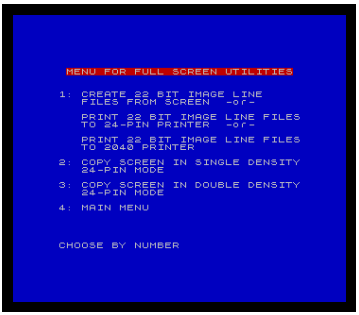
The 2068's ROM cannot load ZX81 tapes, which use a different format and character set. First Loader is 234 bytes of machine code that reads the ZX81 tape signal itself, plus a 256-byte table that translates every ZX81 character and keyword token into its 2068 equivalent as each line arrives. Type CLEAR 43999, load the two code blocks, enter RANDOMIZE USR 45000, start the old tape, and when the 2068 says OK you can LIST, edit and SAVE the result. ZX81 graphics become 2068 block graphics; SLOW, FAST, SCROLL and UNPLOT, which the 2068 lacks, become spaces for you to fix by hand.

David Ornstein published the original in Syntax in 1983, and David Solly of the Ottawa Timex Sinclair group reworked it in 1987 to turn TS1000 listings into text for MScript. It is a practical answer to a question many 2068 buyers had: what about all my ZX81 tapes? The download includes a scan of Solly's newsletter article.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough, plus the ZX81 or TS1000 program to convert, on cassette or as an audio file played into the tape input. timexsinclair.com/computer_media/first-loader/

24-Pin Bit Image Graphics

Larry Crawford, 1990



Screen copies for the 24-pin dot matrix printers that replaced the old 8-pin models around 1990.

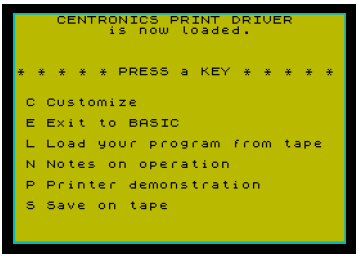
These public-domain BASIC programs and one machine-code routine copy a single character line or the whole 2068 screen to a printer such as the Panasonic KX-P1124 or Citizen GSX-140, using Epson 24-pin bit-image mode in single or double density, positive or inverse. Each screen pixel is printed three pins tall so the picture keeps its shape; Crawford's conversion chart and

the BASIC show exactly how eight pixels become three bytes. Screen lines can also be saved as 256-byte files and checked on the TS2040 before you commit them to the big printer.

By 1990 the 8-pin printers most 2068 drivers assumed were giving way to 24-pin and bubble-jet machines, and Crawford wrote this as groundwork for CAD and drawing programs to use them. He explained it in Update and Sinc-Link, and the download has his notes, the conversion chart and a commented disassembly. Part of the code adapts Stan Lemke's pixel-by-pixel screen copy.

Run in Browser on timexsinclair.com, or download it for ZEsarUX. The TS2040 options work on their own; real 24-pin output needs an Epson-compatible 24-pin printer on an AERCO or Oliger Centronics port. timexsinclair.com/computer_media/24-pin-bit-image-graphics/

AERCO 2068 Printer Driver V2.1



AERCO, 1984

The Centronics driver that let a 2068 LPRINT and LLIST to an ordinary dot matrix printer.

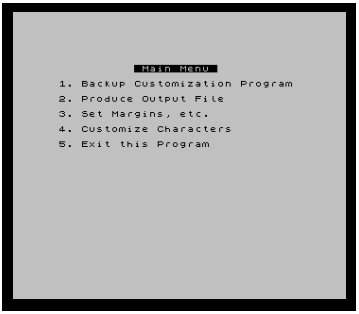
AERCO, the Acme Electric Robot Co. of Austin, Texas, sold one of the first full-size printer interfaces for the 2068. This tape holds its 1,111-byte driver and a menu program to set it up. The driver redirects the 2068's printer vector, so LPRINT, LLIST and COPY go to the parallel printer, and in its default mode it expands BASIC keywords as they print. POKE 64456,0 switches to literal mode for control codes and bit-image graphics. The Customize option sets up seven printers, including Epson, Star Gemini 10X, Prowriter 8510, Seikosha GP-100 and Olivetti PR 2300, and the demonstration prints a list of programming laws and then LLISTs itself.

Much North American 2068 printing ran through this code or its descendants, including Jack Dohany's relocatable version 4. It is the plainest way to see how the machine was connected to an office printer in 1984.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. For real printing you need an AERCO or compatible Centronics interface and a parallel printer. timexsinclair.com/computer_media/aerco-2068-printer-driver-v2-1/

Power Print

William McBrine / McBrine Computer Products, 1988



A build-your-own printer driver with correct LLISTings, screen dumps and a background print spooler.

Tell the configuration program the address you want, the interface (AERCO, A&J, Tasman B or Tasman C) and the modules you need, and it assembles a driver containing only those parts. LLIST then prints every 2068 keyword, the block graphics, UDGs and the copyright and pound signs correctly, with margins, a set line length and working TAB, AT and comma tab stops. INVERSE, BRIGHT and FLASH text print as emphasized, underlined and italic. Optional modules give large and small graphics dumps, a fast text-only dump and an interrupt-driven spooler that feeds the printer one character every sixtieth of a second while your program keeps running.

The dumps read the video-mode system variable, so they also work in the 2068's 512-pixel, 64-column mode, which most drivers ignored. McBrine's two-part manual, its corrections and a table of Epson control codes are in the download.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. Printing needs an Epson-compatible printer on an AERCO, A&J or Tasman parallel interface. timexsinclair.com/computer_media/power-print/

07 COMMUNICATIONS, BBS & HAM RADIO

Timex sold the TS2050 modem for the 2068, and North American owners used it and later 1200-baud modems to call each other's bulletin boards, many of them run by user groups on 2068s. Terminal programs moved from 300 baud and tape buffers to 64-column screens, Xmodem and disk. Amateur radio operators were a large part of the user base, and their club libraries are full of Morse trainers and satellite trackers. Most programs here need a modem or serial interface to do their real job, but you can still explore the menus and screens.

MAX-COM BBS

Larry Kenny / LARKEN Electronics, 1994

A terminal program and a dial-in bulletin board in one, writing every transfer straight to disk.

In terminal mode MAX-COM gives you Xmodem send and receive with 128-, 512- or 1024-byte blocks, a capture buffer saved to disk, an auto-dialer and 300 or 1200 baud through the TS2050 or a Z-SIO serial interface. Because files go to disk rather than memory, transfers larger than 64K work. In BBS mode it answers the phone and shows the session in one window and the caller list in another. Callers log on with a password or as GUEST, and their level decides whether they may download or upload. They can browse the catalogue, read and leave messages in two message bases, and page the sysop to chat. A level-5 caller gets a sysop menu over the phone line.

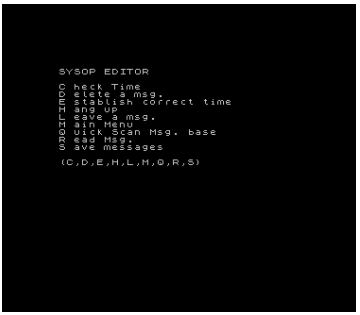
Larken launched MAXCOM in 1989, and this copy is Kenny's January 1994 version, set up as a working board with logon screens for the Chicago Area Timex Users Group and the ZXir QLive Alive! board. Reviewers called it the most elaborate BBS available for the 2068.

Download from timexsinclair.com. It needs a TS2068 with the Larken disk interface and LKDOS, plus a TS2050 or a Z-SIO interface and modem; it has not been converted for tape. timexsinclair.com/computer_media/max-com-bbs/

ISTUG-BBS

Paul Holmgren & Willie Jones / ISTUG, 1987

A complete bulletin board in BASIC for an unexpanded 2068 and the TS2050 modem.



The board holds 40 messages of up to 535 characters, each with To, From and a date stamp from the 2068's frame counter, which the sysop sets as a clock. Callers read and leave messages, scan bulletins and page the sysop for a chat; the program logs their time on line. Three short machine-code routines handle the serial port, and everything else is readable BASIC, with line numbers held in named variables so the structure is easy to follow. Pressing SYMBOL SHIFT at the console opens a sysop editor to read, delete and write messages and save the message base to tape.

The Indiana Sinclair Timex User Group ran its own board with this program, and it shows how far a user group could go with no hardware beyond the stock computer, the modem and a cassette recorder. The site has the documentation and Frank Davis's articles about the board.

Run in Browser on timexsinclair.com to see the sysop side, or download it for ZEsarUX. Real use needs a TS2050 modem; a TS2040 printer is optional. timexsinclair.com/computer_media/istug-bbs/

MTerm II (Micro-Systems 1983 cassette)

Micro-Systems Software, 1983

The smart terminal program written for the TS2050 modem that Timex sold with the 2068.

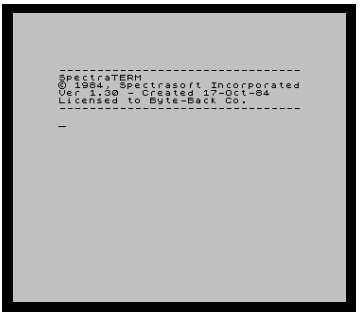
MTERM auto-dials numbers from a 14-entry directory and captures incoming text in a 27K buffer that you can view, print or send back out. Ten MacroKeys hold up to 53 characters each for log-on sequences. The setup menu covers duplex, word length, parity, stop bits, line-feed handling and translation tables, and the settings save to tape. It can also send and receive BASIC programs, from a BBS or another 2068. All of it is a single 7,721-byte machine-code block with no BASIC loader.

Micro-Systems Software of Florida, which also wrote MScript, produced it; this cassette is licensed to Zebra Systems, while the cartridge MTERM II went out with the Westridge 2050 modem. Its manual was so poorly re-

ceived that Bill Ferrebee's tutorial series in T-S Horizons became the usual guide, and the site has both.

Run in Browser on timexsinclair.com, or download it for ZEsarUX. Calling out needs a TS2050 modem. The download's .tap file is really in TZX format. timexsinclair.com/computer_media/mterm-ii-2/

SpectraTerm 1.30



Spectrasoft / Byte-Back Co., 1984

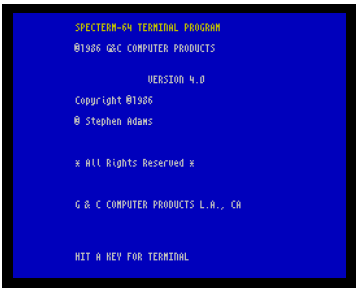
The terminal program for Byte-Back's MD-68 modem, with a 32K buffer and auto-answer.

SpectraTERM runs at 300 baud and stores captured text in REM statements, so a saved buffer can be loaded and read later without the terminal program. Its command line sets word length from 5 to 8 bits, stop bits, parity, duplex, a prompt character and a character delay, opens and transmits the buffer, and turns printing on and off, to the TS2040 or an 80-column printer. Two 2068s both running SpectraTERM can swap BASIC programs using an ENQ handshake. It can answer incoming calls but has no auto-dialer.

Byte-Back of South Carolina built the MD-68 as a direct-connect modem for the 2068, an alternative to the TS2050, and licensed this program from Spectrasoft to go with it. It is a good example of the small hardware firms that kept the platform supplied after Timex left.

Download from timexsinclair.com (TAP, TZX and WAV). The program will not start without the MD-68 modem attached, so in an emulator you can only load it; the MD-68 manual and SpectraTERM documentation are on the site. timexsinclair.com/computer_media/spectraterm-1-30/

Specterm-64 v4.0



Stephen Adams / G&C Computer Products, 1986

A 64-column terminal program for 300 and 1200 baud, with drivers for four serial setups.

Specterm-64 shows 64 characters per line on an ordinary TV using its own narrow character set, so text from a BBS keeps its layout. It has a status line, a 31K buffer saved as TEXT.CODES, a prompt

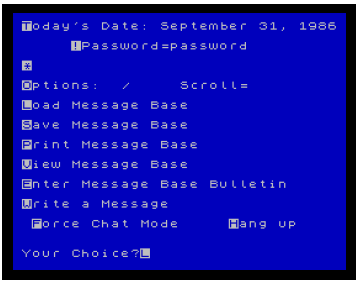
for sending control characters and, according to the product listing, XMODEM transfers. The loader asks which interface you have and loads a small overlay for it: a stock TS2050, a modified 2050, a Z-SI/O, or a Z-SI/O readdressed to share the bus with an Oliger disk system. Option 1 saves a copy already set up for your hardware.

G&C Computer Products of Los Angeles, Dave Clifford and Ed Grey, adapted it from a Spectrum program for the 2068. It leaves about 7K of BASIC space free so you can add your own loaders, menus and dialers.

Run in Browser on timexsinclair.com to see the loader and screen, or download it for ZEsarUX. Going on line needs a TS2050 or Z-SI/O interface and modem. Type the interface name exactly as listed. timexsinclair.com/computer_media/specterm-64-v4-0/

Flexi-Board

Kurt A. Casby, 1986



A compact BBS program 'dedicated to all Timex/Sinclair users in America'.

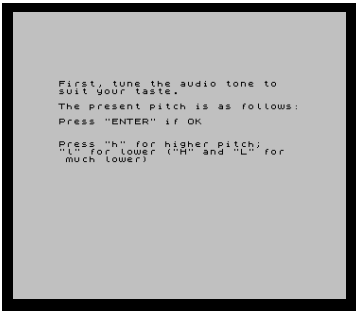
Callers get a menu to read and write messages, chat with the sysop, toggle line feeds and set their line length from 32 to 255 characters. The sysop can load and save message bases, view and print them, set each base read-only, read-write or write-only, force a chat or hang up. A 2,176-byte machine-code block at the top of memory does the serial work, the message base sits in memory as a code block, and the BASIC is packed tight: line numbers come from CODE of a character, and the setup lines delete themselves once the board is running.

Casby also wrote the Loader V utility and the XLATE upload converter, and the archive files this tape as Casboard 2068, the name of his BBS package, which came in tape, A&J Microdrive and disk versions. It is a second, more compact take on the user-group board alongside ISTUG-BBS.

Run in Browser on timexsinclair.com to see the sysop screen, or download it for ZEsarUX. Running a real board needs a modem. timexsinclair.com/computer_media/casboard-2068/

Sound Approach

John (Basil) Wentworth, 1988



A Morse code trainer from SyncWare News's three-author ham radio series.

Set the tone with h and l, then pick an exercise. Typewriter mode sounds each key you press as dots and dashes. The text drill sends a line you type, and the random drill sends endless five-character groups of letters, figures and common punctuation, which is how operators practised copying code. Choose any speed from 2 to 15 words per minute and whether each character appears on screen as it is sent or only at the end. Inside, each character's code is turned into a line number, so the Morse table is a jump table with no searching.

SyncWare News ran it in January/February 1988 with two other ham programs by different authors, written independently, under the title Pounding Brass and Blinking Symbols. Wentworth, of Bloomington, Indiana, later served as a SNUG vice president. It is short, readable BASIC, easy to change if you want a different tone length or character set.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough; the sound comes through BEEP. timexsinclair.com/computer_media/sound-approach/

OSCAR-TEN

Frank H. Bouldin, W5GAA / Fort Worth TS2068 Club, 1985

A tracker for the OSCAR-10 amateur radio satellite, with maps, footprints and Doppler figures.

Enter a date and UTC time and the program works out where OSCAR-10 is from its stored Keplerian elements, correcting for the Earth's oblateness and the drift of the orbit and solving Kepler's equation step by step. You can see the satellite on a world map, on seven regional maps with its radio footprint drawn as a circle, as a table of tracking data, or as a list of 18 world cities showing which ones it

can reach. The regional view adds an azimuth and elevation compass and the Doppler-shifted uplink and downlink frequencies for the Mode B and Mode L transponders.

Bouldin set it up for Fort Worth, Texas, with an element set from August 1985. It is serious orbital mechanics in Sinclair BASIC, and typical of the ham radio software that filled North American club libraries.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse. A stock 2068 is enough; printer output is optional. timexsinclair.com/computer_media/oscar-ten/

08 PRODUCTIVITY: WORD PROCESSING, DATA & FINANCE

Many North Americans bought the 2068 to do real work at home, and its 64-column mode and full-size printer interfaces made it more practical for letters and records than the ZX81 had been. The scene produced its own word processors, from MScript in 1983 to Bill Jones's disk-based office suites around 1990, alongside databases, ledgers and household budgets, many of them published as listings in user-group newsletters. Look for how each program works around the 2068's memory, and for the later ones that lean on disk drives to do it.

Hybiscus: Daisy.B6 and Udbm.B6 (Larken Edition)

Bill Jones / Gulf Micro Electronics, 1990

A disk-based office system for the 2068: a word processor and a universal database that load each other as you work.

Daisy.B6 is the word processor. Text goes into a fast turbo typing buffer, and full-screen editing gives block cut and paste. About thirty menus, stored on disk as screen files, cover page formats, print styles for dot-matrix printers, print macros for simple page layout, outlines, mail merge and labels. Udbm.B6, the Universal Data Base Manager, builds and prints sequential files of lines, paragraphs and page macros, and its companion programs read and convert Tasword and MScript files. The system is far larger than the 2068's memory, so each part MERGEs and deletes its own overlays from disk as needed, and Daisy and Udbm call each other.

Jones, of Panama City, Florida, was the editor of UPDATE magazine, which issued the disks. With 23 linked articles, including David Lassov's eleven-part series on using it, this is the most discussed 2068 program on the site. It is as close as the platform came to the integrated office packages on larger machines.

Download from timexsinclair.com. It needs a TS2068 with the Larken disk interface and the LKDOS V3 EPROM, because it loads its overlays from disk and prints through the Larken printer channel; it cannot run from tape. Jones's 1989 manual is on the site. timexsinclair.com/computer_media/hybiscus-daisy-b6-and-udbm-b6-larken-edition/

Smart Text (TS2068 Larken Edition)

Bill Jones / Gulf Micro Electronics, 1989

Bill Jones's word processor and office program, the forerunner of Daisy.

Smart Text keeps your text in paragraph arrays that save to disk as numbered files and print back to back as one long document. Typing goes through Don Lamen's short turbo input routine, so the 2068 keeps up with a fast typist. Menus set page format, line spacing, captions and print style (pica, elite, condensed, italic or expanded) for Oliger, AERCO, Tasman or A&J printer interfaces. The Office Tools menu adds an automatic letterhead and sign-off, a mailing list with sorting and labels, envelopes and invoices, and repeat printing, so one letter can go to every name on the list.

Time Designs's reviewer compared it to AppleWorks, and T-S Horizons's reviewer joked that Jones had reinvented WordStar. The download has the Larken disks with on-screen tutors, an AERCO DOS-64 edition, and the original 1984 tape and OS-64 versions.

Download from timexsinclair.com. The Larken edition needs a 2068 with the Larken disk interface and LKDOS. The 32-column tape version in the download runs in ZEsarUX; without a printer interface it stops at start-up, and GO TO 2083 continues to the menus. timexsinclair.com/computer_media/smart-text-ts2068-larken-edition/

MScript (Original)

Micro-Systems Software, 1983

The machine-code word processor that used the 2068's 64-column mode for a 64 by 22 text screen.

MScript shows your document 64 characters wide, so the screen matches the printed line far better than a 32-column editor. FUNCTION-key commands mark, copy, move and delete blocks, find and repeat, insert and merge files, and place printer codes and page breaks. Format lines typed into the text, such as >LM=10,JU=N,LL=60, set margins, line length and justification. A BASIC menu around the editor saves and loads text or a marked block, appends

files, and picks the AERCO, Tasman, A&J or TS2040 printer. The tape includes sample documents: a letterhead, a business letter, an envelope and a story chapter.

Spectrum owners in Britain usually reached for Tasword Two, which squeezed 64 columns out of a narrow font; MScript uses the 2068's real 512-pixel mode. It was the main machine-code word processor for North American 2068 owners, and Jack Dohany and others later produced customized versions for tape, wafer and several disk systems.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough; a full-size printer needs an AERCO, Tasman or A&J interface. timexsinclair.com/computer_media/mscript/

ProFile 2068

Thomas B. Woods, 1984

A free-form filing program: type records like index cards, then find them by any word in them.

Each record is a page of up to 15 lines of 32 characters, typed in a full-screen editor with insert, overtype and line insert and delete. There are no fields to define. To find something, type a word or phrase, or several joined with AND, and each matching record appears with options to print, delete or edit it. AUTOSEARCH runs a search unattended, printing every match and sorting the results on a chosen line, and DEFP decides which lines print. Machine code does the searching and storing, and the whole database is saved with the program, so each data tape is a self-starting copy.

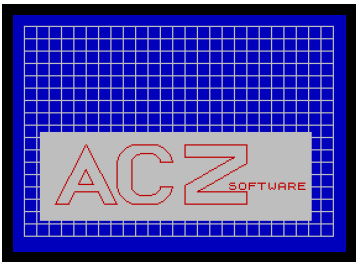
Woods had written ZX PRO/FILE for the TS1000 and rewrote it from scratch for the 2068; later he put it on a cartridge and moved it to the PC as FINDEX. Users built on it for years: Robert Fischer, a band director who kept his school's instrument records in it, published a long series of add-ons.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough; printing uses the TS2040. timexsinclair.com/computer_media/profile-2068/

ACZ General Ledger 2000

Alan R. Czarnek / Cottage Technology, 1984

A double-entry general ledger for a small business, in two programs on one tape.



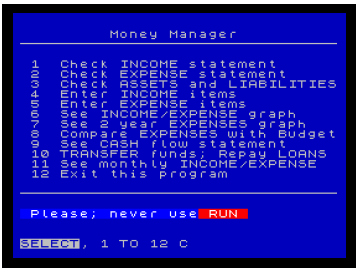
A setup program prepares a financial statements tape and two data tapes. The first module takes journal entries, up to 800 a month across 150 accounts, and shows ledger detail; the second produces the income statement, balance sheet, equity statement and monthly and year-to-date trial balances. Entry screens check every number and let you move back with the arrow keys to correct a line in place. A 500-byte machine-code routine sorts the entries and looks up account names, and you can type figures on a Cardco numeric keypad plugged into a joystick port.

The T-S Horizons reviewer described it as aimed at a small business's most important reports at minimum expense. It is one of the more serious business programs written for the 2068, and the manual is on the site.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough; reports print on the TS2040, and the Cardco keypad is optional. timexsinclair.com/computer_media/acz-general-ledger-2000/

Money Manager

Paul Holmgren, 1987



A personal finance program covering income, expenses, assets, loans and budgets for two years of months.

On first run the program walks you through setting up your income and expense items, account balances and budget figures, then deletes the setup code to free memory. Each month you enter income, expenses and loan payments. It shows income and expense statements for the month and year to date, assets and liabilities, a cash flow statement, budget against actual, monthly averages and loan principal paid on mortgages, and draws bar graphs of income and expenses over two years with block graphics.

Alan Pattison published the original for the TS1000 in SYNC in January 1983. Holmgren, of the Indiana Sinclair Timex User Group, could never get it working on his 1000, so he reworked it for the 2068 and published it

in the ISTUG newsletter. It is a good example of a program passing between machines and magazines in the North American scene.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse. A stock 2068 is enough. timexsinclair.com/computer_media/money-manager/

Budget

Bob Mitchell, 1988

A household budget with pull-down menus, a moving bar cursor, pie charts and printed spreadsheets.

Set planned amounts for 18 spending categories for the year, then enter actual expenses as they happen. Menus drop down in double-lined boxes and you choose with a green bar moved by the cursor keys. Displays show planned or actual figures four months at a time, a month's year-to-date plan, actual and variance, or one category across twelve months, with overspending flashing in red. Pie charts and bar graphs show where the money went, and every screen copies to the TS2040. A separate program prints full planned, actual and year-to-date sheets on a wide printer.

Mitchell, of Willowdale, Ontario, compiled both programs with TIMACHINE; the BASIC sources are included so you can rename categories and recompile. Pull-down menus and a bar cursor were unusual on the 2068.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 runs the budget; the spreadsheet printout needs a Centronics interface and a wide printer. timexsinclair.com/computer_media/budget-2/

Screen-Calc

Andrew Banta / Banta Software, 1983

An early spreadsheet written for the 2068, with up to 1,008 cells and formulas that can use any BASIC function.

Choose the grid size and Screen-Calc fits as many columns as it can into 1,008 cells. Each cell holds a number and an 8-letter label, and can be given a formula. Formulas can sum or average a row or

column, test conditions with IF and ELSE, and refer to other cells; the program turns them into BASIC expressions and evaluates them with VAL, so trig and the rest of the ROM's maths are available. You can insert and delete columns, find a cell by its label, jump to a cell, save the sheet or the data alone to tape and print a formatted report.

Psion's VU-CALC from Britain was the better-known 2068 spreadsheet. Screen-Calc is a home-grown alternative from 1983, written in BASIC and slower, and a 1983 reviewer found it odd. Its formula approach is the reason to try it: any expression Sinclair BASIC can evaluate can go in a cell.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough; a printer is optional. timexsinclair.com/computer_media/screen-calc/

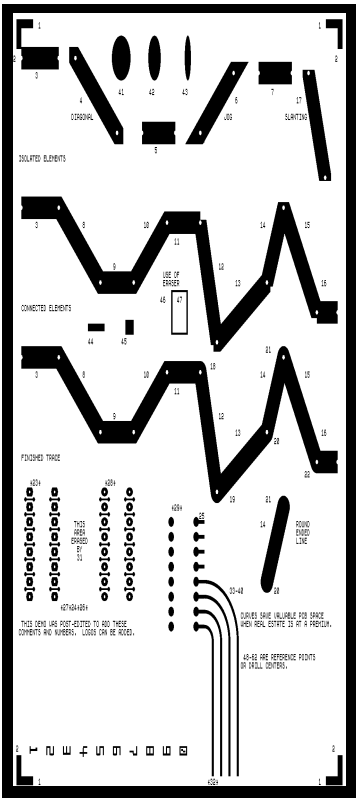
09 HOME, HOBBY, SCIENCE & EDUCATION

Once the games and word processors were covered, North American 2068 owners turned the machine to their own interests: etching circuit boards, fishing, astronomy, medicine and teaching their children. Many of these programs came from one enthusiast with a specific need and were sold by mail, shared through user groups or printed in newsletters. Look for the ones where the author's hobby or profession shows through in the detail.

WIDJUP CAD

William J. Pedersen / WIDJUP Co., 1989

Printed-circuit-board artwork software that prints full-size photo masters for etching your own boards.



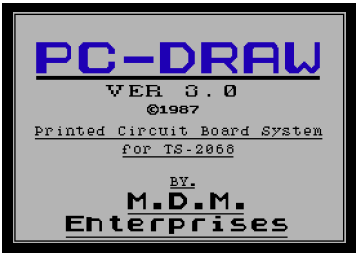
You describe a board as a list of up to 99 items: traces, 45-degree jogs and slants, round and oblong pads, boxes, circles, ellipses and arcs. Any item can repeat across and down at a set pitch, which suits rows of IC pads, and any item can be an eraser that clears what lies under it. The editor shows five items at a time, DISPLAY draws the whole board on a 5 by 4 inch grid, and GENERATE turns it into a 960-dot-wide raster for an Epson-class printer, a strip at a time, sending it to the printer, to image frames on disk, or both. COPY prints the saved frames at double size as masters for photographic etching.

Pedersen sold it as shareware in versions for the Olivetti PR2300 ink-jet, Larken disks and Oliger disks, and UPDATE magazine printed the program and manual in 1992. It is real engineering software for home electronics builders, on a computer most people remember for games.

Run in Browser on timexsinclair.com, or download it for ZEsarUX; both the Oliger and Larken versions are converted to load from tape, with sample boards. Printing needs an Epson-compatible printer on a parallel interface. timexsinclair.com/computer_media/widjup-cad/

PC-Draw v3.0

Duane Malburg & Michael Davis / MDM Enterprises, 1987



Another way to lay out printed circuit boards on the 2068 and print them ready to photograph.

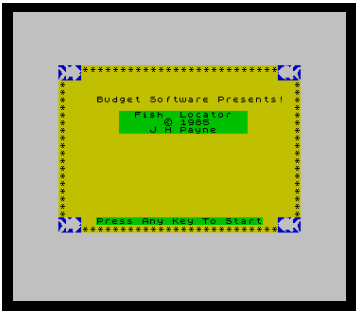
PC-Draw lets you draw circuit-board artwork with a joystick and then prints it on an Epson-compatible printer as artwork to be photographed into a negative for etching. The print menu queues up to six copies, each set separately for true or mirror image, quick or camera-ready quality, and with or without a grid. A setup section configures the machine-code printer driver for A&J, Tasman B, AERCO, Oliger or other interfaces by port, strobe and busy-line settings, and the loader converts files saved by version 2.0.

MDM's program was announced in Time Designs in 1987 and reviewed in 1988. Compared with WIDJUP CAD, which builds a board from a typed list of shapes, PC-Draw is drawn by hand on screen, so the two show different answers to the same hobbyist problem.

Run in Browser on timexsinclair.com, or download it for ZEsarUX. A joystick helps; printing needs an Epson-compatible printer on a parallel interface. timexsinclair.com/computer_media/pc-draw-v3-0/

Fish Locator

Jack Payne / Budgetsoft, 1985



Solunar tables and a fishing guide's rules of thumb, telling you when, where and how to fish.

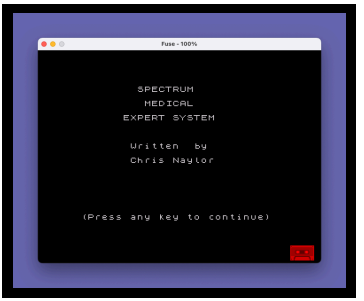
Pick your town from a directory of 75 North American cities, or type a longitude, and enter the date. Then rate the day's wind, temperature trend, water temperature, barometer, sky and water clarity. Fish Locator shows a Today's Prospects table rating each factor with the moon phase and season, gives the day's major and minor solunar periods, and follows with pages of advice on lures, depths and locations. Other options cover walleye, northern pike and bass, and a month of fishing times with moon-phase symbols. Every screen can go to the printer.

Payne was a fishing guide with more than 30 years' experience, and SUM magazine called it one of the most original programs it had received. Budgetsoft went on to supply its solunar tables to resorts and newspapers, and in 1993 Payne wrote that he still used a 2068 to produce fishing and hunting timetables for his customers.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX. A stock 2068 is enough; a TS2040 is optional. Don't use CLEAR or RUN, as the program's data lives in its saved variables. timexsinclair.com/computer_media/fish-locator/

Med-Expert

Chris Naylor; 2068 version by Pete Fischer, 1983



A medical diagnosis expert system that weighs 68 symptoms against 90-odd illnesses using Bayes' theorem.

The program asks one symptom question at a time, and you answer on a scale from -5 (definitely not) to +5 (definitely yes). After each answer it updates the probability of every illness, drops those that fall to zero, and chooses as the next question the symptom that would tell it the most. It stops when one illness's lowest likely probability is above every other's highest, and reports the diagnosis. Beginner and advanced information screens explain the method, and they warn that a full consultation takes about two hours in interpreted BASIC.

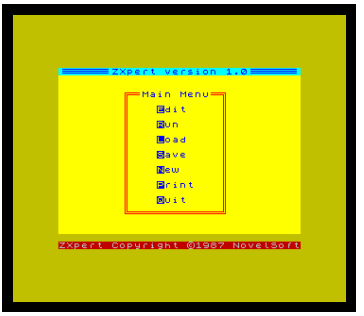
The engine and data come from Chris Naylor's 1983 book Build Your Own Expert System; Pete Fischer of Tempe, Arizona, put it on the 2068 and offered it as a demonstration of artificial intelligence on Sinclair computers. Expert systems were the AI topic of the mid-1980s, and this shows the idea working on a home computer. It is a curiosity, not medical advice.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse, where you can speed up the emulator. A stock 2068 is enough. timexsinclair.com/computer_media/med-expert/

ZXpert

NovelSoft, 1987

An expert-system shell: write your own rule base on any subject, then let the program question you.



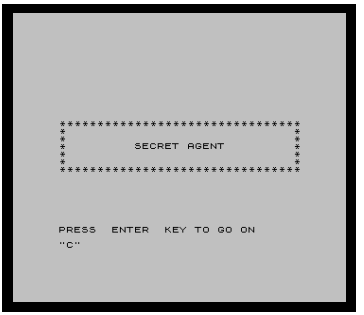
In Edit you enter rules; in Run, ZXpert asks questions you answer Y, N or U for unknown, and works through the rules until it reports the probable cause of a problem and its fix, or admits it is stumped. Rule bases save and load as a pair of code files and can be printed. Two come with it. The Photo Fault Finder diagnoses sharpness, exposure and focus problems in colour snapshots, and ANALYST asks two dozen questions about handwriting, such as spacing, slant and legibility, and lists personality traits.

The engine is almost all machine code, so consultations are quick. NovelSoft of Toronto, which also published TIMACHINE, sold it as artificial intelligence for the 2068. Set it beside Med-Expert to see the difference between a fixed expert system and a shell you fill yourself.

Run in Browser on timexsinclair.com, or download it for ZEsarUX. Choose Load and type PHOTO or ANALYST to load a sample rule base. A stock 2068 is enough. timexsinclair.com/computer_media/zxpert/

Secret Agent

Bill Harmer & David Solly, 1985



A message encoder and decoder from Ottawa that user-group newsletters kept reprinting.

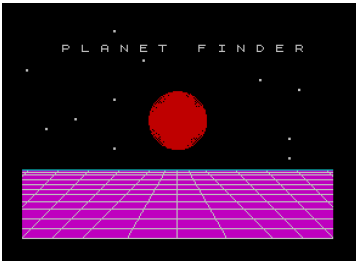
Choose CODE or DECODE and one of four coding options, then type a message of up to about 100 characters. Each letter, digit or symbol is shifted by an amount set by the option and printed as a two-digit number followed by a comma, ready to copy down and pass on. Your friend picks the same option to turn the numbers back into text. Spaces are dropped, so decoded messages run together. Entering 0000 decodes the message you just encoded as a self-test, and typing SESAME at the first prompt opens a hidden backup routine.

Bill Harmer wrote it and David Solly converted it to the 2068 in 1985. It appeared in several Canadian and US user-group newsletters through 1989. It is a short, clear BASIC program, easy to type in, read and change,

which made it a good fit for newsletters.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse. A stock 2068 is enough. timexsinclair.com/computer_media/secret-agent/

Planet Finder



Michael Zerbo, 1984

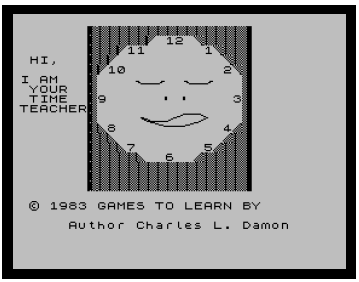
A Solar System tutorial with orbit diagrams, planet data, a weight calculator and an 80-question quiz.

Pick up to ten bodies on a drawing of the planets' orbits and get a page of figures for each, with its symbol and a picture. Other options cover each planet's moons, the Moon and its phases, the tilt of each orbit drawn as fanned lines from the Sun, and what you would weigh on another planet. The 80-question multiple-choice test can be taken in four groups or all at once, with a percentage grade for each group. Wrong answers are generated fresh each time, so you can't learn the test by its distractors. A loader program adds instructions and a glossary of astronomy terms.

Zerbo, of Sayville, New York, sold it by mail for $14.95. SyncWare News praised its design and graphics in 1985. It is a typical example of the school-level science software 2068 owners wrote for their own families.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse. A stock 2068 is enough. timexsinclair.com/computer_media/planet-finder/

Time Teacher I



Charles L. Damon / Timex Computer Corp., 1983

A clock-reading tutor for young children from Timex's own educational line.

The child types their name, then works through five levels: the hour, the half hour, quarter past, quarter to, and minutes. Each question draws an analogue clock with CIRCLE and DRAW, places the numerals around it and sets the hands, and the child types the time shown. A correct answer gets a fanfare; after three wrong tries the

program shows the answer. A screen for parents and teachers explains the approach, and the title screen has an animated clock built from user-defined graphics.

It is one of Timex's own US educational titles for the 2068, alongside Language Usage and Spelling I, aimed at pre-school to third grade. After Timex left the computer business it was published by Games to Learn By. It shows the home-learning market Timex was aiming at.

Run in Browser on timexsinclair.com, or download it and load it in ZEsarUX or Fuse. A stock 2068 is enough. timexsinclair.com/computer_media/time-teacher-i/

Blam

Richard Haseltine / Riverside Software, 1984

A touch-typing course that ends in an arcade game: stop the falling bombs by pressing the right key with the right finger.

The first program teaches the keyboard with animated diagrams of the hands and home row, then a finger exercise and a timed Firecracker game. The second is BLAM itself: bombs labelled with letters drop down the screen and you defuse each one by typing its letter before it lands. You choose letter sets and one of four speeds, and the program keeps score records for each player, which can be saved to tape. One option builds a practice set from the letters you keep missing.

The same idea drove Type Attack on the Atari and Apple. Blam does it in BASIC with redefined graphics for the bombs, explosions and hands, and pairs it with a proper lesson sequence, which makes it a teaching tool as much as a game.

Run in Browser on timexsinclair.com, or download both sides and load them in ZEsarUX or Fuse. A stock 2068 is enough. timexsinclair.com/computer_media/blam/

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10 THE COMMUNITY TODAY

The TS2068 community outlasted Timex by more than a decade. User groups kept their libraries and newsletters going into the 1990s, and much of the best software in this guide, from desktop publishing to disk systems and bulletin boards, was written after the machine was officially dead.

New work is still appearing. Jon Becker has written new programs for the 2068, among them the TSWriter word processor and ports of the arcade games Sinistar and Berzerk, and Charlie Day's 2068-Leap ROMs give the machine a new operating environment. Josef Jelinek's TSRun emulator puts the archive's programs a click away in any web browser. timexsinclair.com keeps the tapes, listings, magazines and newsletters together; if you have material from the Timex years, it belongs in that record too.

FIND THEM ALL

Every program in this guide, with its download, listing and the articles that published or reviewed it, is at timexsinclair.com. Many run in your browser with one click.

ZEsarUX and Fuse are free emulators that load TS2068 tapes (.tap and .tzx files).

Compiled from the timexsinclair.com archive, 2026. Program descriptions are based on the programs themselves, their listings and their original reviews.