

Readiness report — Gigatron TTL Microcomputer

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Readiness: Gigatron TTL Microcomputer

Verdict: Ready with caveats · 2026-09-02 · est. parts cost \$120–\$150 (excludes PCB fabrication and enclosure) **Cybersecurity — software & network: Could not check**

All 39 logic ICs are Active and in stock, and two of the four problems flagged in the July report have fixed themselves: the 74HCT04 hex inverter and the DB9 gamepad plug are both back in DigiKey stock, so neither needs the substitute the last report recommended. Three items still need a deliberate choice when you order. The 32K SRAM named in the BOM is gone from authorized distribution entirely and must be substituted; DigiKey now holds only 27 of the 100 nF bypass capacitors and the board needs 40; and the 6.25 MHz crystal is stocked by exactly one distributor. Each of those has a verified answer below, so nothing blocks a build — but you cannot fill this BOM from a single DigiKey cart. The verdict is unchanged from 2026-07-19: the number of troubled parts is about the same, but which parts they are has changed.

Action required

Part	Problem	Recommended action
62256 SRAM (LY62256PL-55LLI)	Unobtainable. DigiKey returns no match, and the ECIA authorized-distributor query returns "no ECIA-authorized distributor lists this exact part number".	Substitute Alliance AS6C62256-55PCN , \$10.13, 5,816 in stock. See Substitutes.
100 nF bypass cap (K104K10X7RF5UH5) ×40	New since the last report. DigiKey stock has fallen from 233,541 to 27 — not enough for one board.	Either order the exact part from Newark (48,705 @ \$0.276), or use the verified substitute K104K15X7RF5TH5 (345,661 @ \$0.29).
6.25 MHz crystal (MP062-E)	Zero stock at DigiKey with a 19-week factory lead time; only one distributor holds any.	Buy from Mouser (1,000 @ \$1.01). Do not substitute — the frequency sets the VGA timing.
74HCT32 (CD74HCT32EE4)	The exact ordering code has zero DigiKey stock and a 16-week factory lead.	Use CD74HCT32E (\$1.02, 1,705) — identical package and electricals — or buy the EE4 code from Mouser (944 @ \$1.01).
Wooden enclosure	Discontinued since 2020; the BOM itself records "custom made, no longer available". Unchanged from the last report.	Fabricate your own, or run the board bare. A community case design exists at thingiverse.com/thing:5445044 .

Part	Problem	Recommended action
Famicom-style gamepad	Retail listings are dominated by Atari/Amiga DB9 joystick adapters, which the manual says will not work.	Order only a Famicom/NES serial shift-register controller, e.g. the 9-pin FC controller at \$2.05 . Confirm the type with the seller before ordering — no listing was verified this run.

Cybersecurity — software & network

Could not check — Both software components are unversioned firmware with no package ecosystem and no advisory database, and the repository they come from publishes no manifest, release or commit to pin them to, so no vulnerability or support check was possible.

Component	Version	How known	Support status
Gigatron System ROM (gigatron-rom)	not determined	not determined (The materials state that ROM v3 or newer is needed for PS/2 program saving and that v4/v5 add games and WozMon, but never state which ROM the kit's EPROM was burned with, and they pin no release or commit. Listing the repository this run showed its default branch (master) carrying ROMv1, ROMv2, ROMv3, ROMv4, ROMv5a and ROMv6 image files side by side, with no manifest of any kind at the root - only a Makefile.)	—
BabelFish ATtiny85 keyboard-bridge firmware	not determined	unpinned (Tracked inside the gigatron-rom repository at Utils/BabelFish rather than released separately. Listing that directory this run showed an Arduino sketch (BabelFish.ino, PS2.ino) alongside prebuilt images BabelFish.ATtiny85.hex/.bin and an older BabelFish.ATtiny85_v1.hex/.bin, with no version file, manifest or lockfile.)	—

No findings — but nothing was checkable this run. Read that as "not examined", not "clean"; the Not checked list below says why.

What this means for your lab

Nothing was actually scanned for vulnerabilities in this lab, because there is nothing scannable: both pieces of software are firmware burned into chips, and no vulnerability database covers that kind of code. Read the absence of findings below as 'not examined', not as 'clean'. The good news is that the exposure is genuinely small: the Gigatron has no network interface at all - no Ethernet, no Wi-Fi, and its Mini-USB connector is wired for 5 V power only, with the data pins unconnected - so there is nothing for someone else on your campus network to reach, and no network precautions are needed before students use it. The practical risk here is version drift rather than security. The lab's materials never say which ROM version the kit shipped with, and they point at the project's repository without naming a release or commit; when we listed that repository on 2 September 2026 its main branch

carried ROM images up to ROMv6, which is newer than the v4/v5 the manual describes. So an instructor who re-burns an EPROM 'from the current repository' today can easily end up with a ROM that behaves differently from the one the manual documents. Decide which ROM version your course expects, write it down alongside the lab materials, and burn that specific image; the same applies to the ATtiny85 keyboard adapter, whose firmware is likewise unversioned.

Not checked

- Gigatron System ROM (gigatron-rom): Vendor firmware burned into a 27C1024 EPROM: no package ecosystem and no vulnerability database covers it, so no advisory check is possible. The repository root was listed this run and holds no parseable manifest (a Makefile only), and no release or commit is pinned by the lab's materials, so there is also no version to check.
- BabelFish ATtiny85 firmware: Bare-metal AVR firmware distributed as an Arduino sketch plus prebuilt .hex/.bin images inside the gigatron-rom repository. No advisory database covers Arduino/AVR firmware, and the directory listing this run showed no manifest, lockfile or version file, so neither a version check nor a vulnerability check is possible.

Parts

Discrete passives and protection

Part	Spec/Package	Status	Stock	Price	Source	Drift
K470J15C0GF5TL2 ×3	47 pF C0G disc, 5.0 mm lead spacing	Active	23,798	\$0.27	DigiKey	+\$0.01; stock −1,138
EEU-FC1E221 ×1	220 µF 25 V radial electrolytic	Active	4,569	\$0.60	DigiKey	flat; stock −2,926
K104K10X7RF5UH5 ×40	100 nF 50 V X7R, 5.00 mm lead spacing	Active, short stock	27 (DigiKey); 48,705 (Newark)	\$0.28	DigiKey / Newark	DigiKey stock 233,541 → 27; price flat
MF-R075 ×1	PTC resettable fuse, 0.75 A hold, radial	Active	3,617	\$0.47	DigiKey	flat; stock −987
MP062-E ×1	6.25 MHz crystal, HC-49/ U, CL 30 pF, ESR 40 Ω	Active, no DigiKey stock (19- week lead)	0 (DigiKey); 1,000 (Mouser)	\$1.01	Mouser	flat price; Mouser 1,007 → 1,000; DigiKey now quotes a 19-week lead

Resistors and resistor networks

Part	Spec/Package	Status	Stock	Price	Source	Drift
CF14JT1M00 ×1	1 MΩ, 0.25 W axial	Active	507,150	\$0.10	DigiKey	flat
CF14JT1K00 ×1	1 kΩ, 0.25 W axial	Active	527,518	\$0.10	DigiKey	flat
CF14JT2K20 ×5	2.2 kΩ, 0.25 W axial	Active	76,070	\$0.10	DigiKey	flat
CF14JT68R0 ×2	68 Ω, 0.25 W axial (VGA sync)	Active	12,729	\$0.10	DigiKey	flat
CF14JT750R ×3	750 Ω, 0.25 W axial (RGB DAC high bits)	Active	20,221	\$0.10	DigiKey	flat
CF14JT1K50 ×3	1.5 kΩ, 0.25 W axial (RGB DAC low bits)	Active	44,718	\$0.10	DigiKey	flat
4605X-101-222LF ×3	2.2 kΩ bussed array, 5-SIP, 2.54 mm	Active, thin at DigiKey	25 (DigiKey); 9,876 (Newark)	\$0.28	DigiKey / Newark	DigiKey 32 → 25; price flat
4606X-R2R-103LF ×1	4-bit R-2R ladder, 10 kΩ, 6-SIP	Active	1,367	\$0.46	DigiKey	flat

Diodes and optoelectronics

Part	Spec/Package	Status	Stock	Price	Source	Drift
1N5339B-TP ×1	5.6 V 5 W Zener, DO-15	Active	66,233	\$1.34	DigiKey	+\$0.08
BAT42-TR ×30	Schottky signal diode, DO-35	Active	22,428	\$0.50	DigiKey	flat; ≈\$15 for the 30 needed
HLMP1700C6A0 ×5	Red 3 mm LED, low-current	Active	7,051	\$0.28	DigiKey	previous report priced a different manufacturer's part at \$0.51

Active integrated circuits and supervisory

Part	Spec/Package	Status	Stock	Price	Source	Drift
SN74HCT04N ×1	Hex inverter, 14-DIP 0.300", 4.5-5.5 V	Active	4,503	\$0.96	DigiKey	back in DigiKey stock (was out of stock; substitute no longer needed)

Part	Spec/Package	Status	Stock	Price	Source	Drift
MCP100-450DI/ TO ×1	Reset supervisor, TO-92	Active	8,646	\$0.42	DigiKey	flat
CD74HCT161E ×6	4-bit counter, 16-DIP	Active	9,038	\$1.34	DigiKey	flat; stock –623
AT27C1024-70PU ×1	64K×16 EPROM, 40-DIP 0.600", 4.5–5.5 V	Active, thin at DigiKey	87 (DigiKey); 566 (Mouser)	\$4.52	DigiKey	96 → 87; price flat
SN74HCT273N ×3	Octal D register, 20-DIP 0.300"	Active	29,342	\$0.93	DigiKey	flat; stock +2,715
SN74HCT244N ×2	Octal 3-state buffer, 20-DIP 0.300"	Active	3,350	\$1.52	DigiKey	flat; stock –1,117
SN74HCT139N ×1	Dual 2-to-4 decoder, 16-DIP	Active	26,317	\$1.26	DigiKey	+\$0.07
CD74HCT153E ×9	Dual 4-to-1 mux, 16-DIP	Active	796	\$1.22	DigiKey	flat; stock –20
SN74HCT138N ×2	3-to-8 decoder, 16-DIP	Active	3,107	\$0.89	DigiKey	flat; stock –314
SN74HCT240N ×1	Octal inverting buffer, 20-DIP	Active	21,873	\$0.96	DigiKey	flat; stock –2,202
CD74HCT32EE4 ×1	Quad 2-input OR, 14-DIP 0.300"	Active but no DigiKey stock (16-week lead)	0 (DigiKey); 944 (Mouser)	\$1.01	Mouser	exact ordering code now at zero DigiKey stock; see Substitutes
CD74HCT283E ×2	4-bit full adder, 16-DIP	Active	650	\$1.40	DigiKey	+\$0.08; stock 915 → 650
SN74HCT377N ×3	Octal D flip-flop with enable, 20-DIP	Active	10,063	\$1.52	DigiKey	+\$0.09
SN74HCT157N ×4	Quad 2-to-1 mux, 16-DIP	Active	33,628	\$1.16	DigiKey	flat

Part	Spec/Package	Status	Stock	Price	Source	Drift
LY62256PL-55LLI ×1	32K×8 SRAM, 28-DIP 0.600", ≤ 70 ns	Unobtainable — no DigiKey match, no ECLA-authorized distributor	0	—	—	unchanged (obsolete in July too); substitute now priced
SN74HC595N ×1	8-bit shift register, 16- DIP	Active	4,836	\$1.97	DigiKey	+\$0.11; stock 14,290 → 4,836

Connectors and sockets

Part	Spec/Package	Status	Stock	Price	Source	Drift
Molex 54819-0519 ×1	Mini-USB Type-B receptacle, R/A (DigiKey code 0548190519)	Active	16,718	\$2.07	DigiKey	flat; stock 901 → 16,718
SJ1-3523N ×1	3.5 mm stereo jack, R/A through-hole	Active	233,492	\$1.12	DigiKey	+\$0.06
L77HDE15SD1CH4R ×1	HD-15 VGA female, R/A, 8.89 mm backset	Active	980	\$2.20	DigiKey	+\$0.13; stock 114 → 980
TE 5747840-3 ×1	DB9 male, R/A, 8.08 mm backset	Active	3,374	\$3.63	DigiKey	back in DigiKey stock ; price \$2.87 → \$3.63
On-Shore ED40DT ×1	40-pin DIP socket, 0.600" row pitch	Active	9,683	\$2.95	DigiKey	— (previous report used an eBay assortment)
Assmann AR-28-HZL- TT ×1	28-pin DIP socket, 0.600" row, 2.54 mm pitch	Active	2,925	\$2.08	DigiKey	— (previous report used an eBay assortment)

Mechanical, hardware and accessories

Part	Spec/ Package	Status	Stock	Price	Source	Drift
Gigatron main PCB ×1	2-layer FR4, ~240 × 170 mm, HASL	Design files published	—	not priced	gigatronttl.eu / hackaday.io	unchanged
Qualtek 3021055-03 ×1	USB-A to Mini-USB-B cable, ~1 m	Active	2,935	\$2.46	DigiKey	— (no baseline)

Part	Spec/ Package	Status	Stock	Price	Source	Drift
TE Connectivity 12100 ×1	EPROM UV window foil label	not checked	—	—	—	— (absent from the previous report)
Famicom-style clone gamepad ×1	8-button NES/Famicom serial, DB9	Available at retail; type must be confirmed	—	\$2.05	Google Shopping	previous report listed \$4.95 (AliExpress, not re-checked)
Wooden enclosure + acrylic lid ×1	Custom laser-cut hardwood frame	Discontinued (production ceased 2020)	—	—	—	unchanged
3M SJ-5302 CLEAR ×8	Bump on feet, 7.9 mm × 5.6 mm	Available; not stocked at DigiKey under this MPN	2,304 (Master Electronics); 236,304 (Mouser)	\$0.0888	Master Electronics	previous report's DigiKey mini-pack (\$14.70) no longer resolves; now ≈\$0.09 per foot
Assembly manual ×1	59-page A4, wire-O bound	Commodity print service	—	\$0.96	Google Shopping	— (no baseline; PDF is CC BY-SA 4.0)

Pluggy McPlugface (PS/2 keyboard daughterboard)

Part	Spec/Package	Status	Stock	Price	Source	Drift
Pluggy McPlugface PCB ×1	2-layer FR4, ~40 × 30 mm	Design files published	—	not priced	gigatronttl.eu / Tindie	unchanged
Kycon KMDGX-6S-AS ×1	6-pin mini-DIN PS/2 female, R/A shielded	Active	4,182	\$1.88	DigiKey	flat
Amphenol L77SDE09SOL2 ×1	DB9 female, R/A through-hole	Active	1,382	\$1.31	DigiKey	+\$0.07; stock –83
ATTiny85-20PU ×1	8-bit AVR MCU, 8-DIP 0.300"	Active	21,937	\$1.66	DigiKey	flat; stock –3,022
Mill-Max 110-47-308-41-001000 ×1	8-pin DIP socket, 0.300" row pitch	Active	1,180	\$0.85	DigiKey	— (no baseline)

Substitutes

For part	Substitute	Differences	Verified	Judgment
LY62256PL-55LLI (32K×8 SRAM)	Alliance AS6C62256-55PCN — \$10.13, 5,816 in stock	Same 28-DIP 0.600" package and same 32K×8 organisation. Supply 2.7–5.5 V vs the lab's 5.0 V rail — wider than required, acceptable. Temperature 0 °C to 70 °C commercial, narrower than the original's industrial grade but ample for a classroom. At \$10.13 it becomes the most expensive part in the BOM.	verified: package + row pitch (28-DIP 0.600", DigiKey parametrics), supply range 2.7–5.5 V vs 5.0 V (DigiKey parametrics), 32K×8 organisation (DigiKey description). not verified: access-time grade — no parametric; the "-55" suffix is assumed to mean 55 ns	Acceptable, and the only authorized-channel option — the specified part is listed by no ECIA distributor. Confirm 55 ns on the datasheet.
K104K10X7RF5UH5 (100 nF bypass)	Vishay K104K15X7RF5TH5 — \$0.29, 345,661 in stock	Identical 0.1 µF, ±10%, 50 V, X7R, –55 °C to 125 °C. Same 0.197" (5.00 mm) lead spacing, same radial through-hole formed-lead style. Body 4.00 × 2.60 mm and 6.60 mm tall vs the original's 3.60 × 2.30 mm and 6.20 mm — 0.4 mm larger each way, worth a glance on a dense board but the hole pattern is unchanged.	verified: capacitance, tolerance, voltage rating, dielectric, operating temperature, lead spacing (0.197"/5.00 mm on both) and mounting type — all from DigiKey parametrics on both parts	Acceptable. DigiKey's own "Direct" substitute, and the practical way to buy 40 pieces in one order.
AT27C1024-70PU (EPROM)	Microchip AT27C1024-45PU — \$4.60, 197 in stock	Same 40-DIP 0.600" package, same 4.5–5.5 V supply. The "-45" grade is faster than the "-70" the BOM asks for; exceeding the access-time requirement is fine. 8 cents dearer.	verified: package + row pitch (40-DIP 0.600", DigiKey parametrics on both), supply range 4.5–5.5 V (DigiKey parametrics on both). not verified: access-time grade — suffix reading, no parametric	Acceptable as a fallback. Keep the specified –70PU as first choice while it is stocked at six distributors. Either must be programmed before installation.

For part	Substitute	Differences	Verified	Judgment
CD74HCT32EE4 (quad OR gate)	TI CD74HCT32E — \$1.02, 1,705 in stock	DigiKey publishes identical parameters for the two ordering codes: 14-DIP (0.300", 7.62 mm), 14-PDIP supplier package, 4.5– 5.5 V supply, 4 mA/4 mA output drive, –55 °C to 125 °C. Price differs by 53 cents at single quantity.	verified: package + row pitch (14-DIP 0.300", DigiKey parametrics on both), supply range 4.5–5.5 V, output drive and operating temperature (DigiKey parametrics on both). not verified: what the "E4" suffix encodes — the evidence does not say	Acceptable. Alternatively buy the exact EE4 code from Mouser at the same \$1.01.

No substitute is offered for the 6.25 MHz crystal: its frequency sets the VGA scan timing, DigiKey's only suggestion (MP062) has no stock either, and the exact part is available from Mouser — buying it there is the answer.

Verify any substitute against its datasheet before ordering.

Other dependencies

- **Main board PCB fabrication** — design files confirmed published. gigatronttl.eu states the PCB design files for both the Gigatron and Pluggy McPlugface were released; its About page (gigatronttl.eu/posts/17.html) lists "Gigatron PCB design (Gerbers)" and "Pluggy PCB design (Gerbers)"; hackaday.io project 20781 offers a 4.60 MB KiCad-and-Gerber zip archive. Fabrication cost not quoted this run.
- **Pluggy McPlugface PCB fabrication** — same source. Ready-made bare boards for both are also sold on [Tindie](#), and legacypixels.com lists a "Pluggy McPlugface Reloaded" PCB with components.
- **Enclosure fabrication** — the original wooden enclosure is discontinued. A community case design is available at thingiverse.com/thing:5445044. The generic laser-cut-box results the search returned are not Gigatron-specific and are not a substitute.
- **Manual printing** — commodity spiral-bound print services quote from \$0.76 for the low-end options; the manual is CC BY-SA 4.0, so printing is optional.
- **Project websites** — gigatronttl.eu and its About page appeared as live search results this run. gigatron.io, forum.gigatronttl.eu, the /walkthrough page and the /diagnostics page were **not checked** — no pages were fetched this run.

Watch list

- **100 nF bypass capacitors (K104K10X7RF5UH5)** — the sharpest move in this report: DigiKey stock fell from 233,541 to 27 while the board needs 40. Newark still holds 48,705 and the verified substitute holds 345,661, so this is a purchasing-route problem rather than a shortage — but watch whether the drop spreads to other distributors.
- **6.25 MHz crystal (MP062-E)** — one distributor with stock, and DigiKey now quotes a 19-week factory lead. If Mouser's 1,000 pieces go, this part becomes the build's hard stop, because the frequency cannot be substituted.
- **AT27C1024-70PU EPROM** — 87 units at DigiKey, slowly declining (96 in July). Six distributors still hold stock and the –45PU grade is a verified fallback, but this remains the least replaceable IC in the design.
- **CD74HCT32EE4** — the exact ordering code went to zero DigiKey stock with a 16-week lead this cycle. Low consequence today because CD74HCT32E is interchangeable, but it shows this family's ordering codes churning.
- **2.2 kΩ SIP arrays (4605X-101-222LF)** — 25 at DigiKey, down from 32, and three are needed per board. Newark's 9,876 is the buffer.
- **32K SRAM substitute (AS6C62256-55PCN)** — now \$10.13 and the most expensive part in the BOM. Worth re-pricing every cycle, since the original is gone and there is no cheaper verified drop-in.
- **Famicom gamepad** — a retail commodity with no manufacturer part number, sourced from marketplaces whose listings turn over constantly, and easy to order wrongly (Atari-style DB9 joysticks do not work).