

Readiness report — DPScope USB Oscilloscope

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Readiness: DPScope USB Oscilloscope

Verdict: Ready with caveats · 2026-07-19 · est. parts cost \$65-\$75

This lab is implementable but requires attention to component package transitions and obsolescence. This is a baseline check to establish a sourcing and pricing foundation. The core microcontroller is available but requires a specific suffix (-SP) to meet the 300 mil DIP footprint requirement, and the original trimmer capacitors and DIP sockets are now obsolete. The project website has migrated, making local hosting of critical firmware binaries a high priority.

Action required

Part	Problem	Recommended action
dsPIC30F2020-E/P	Snapshot part number mismatch	Order dsPIC30F2020-30I/SP to ensure the required 300 mil footprint.
TZ03Z500E169B00	Obsolete	Order substitute GKG60015 (active stock).
4828-3000-CP	Obsolete	Order ED281DT or equivalent through-hole sockets.
dsPIC Firmware	External dependency risk	Download and host the .hex and MPROG files locally; the primary domain has shifted.

Parts

Integrated Circuits

Part	Spec/Package	Status	Stock	Price	Source
dsPIC30F2020-30I/SP	16-bit MCU, 300 mil SPDIP	Active	474	\$7.85	Mouser
MCP6S22-I/P	SPI PGA, DIP-8	Active	218	\$1.97	Mouser
MCP4822-E/P	12-Bit DAC, DIP-8	Active	1,322	\$4.28	DigiKey
MCP6024-I/P	Quad Op-Amp, DIP-14	Active	232	\$2.72	DigiKey

Passive Components

Part	Spec/Package	Status	Stock	Price	Source
MFR-25FBF52-249K	249 kΩ, 1%, Axial	Active	3,087	\$0.10	DigiKey
MFR-25FBF52-9K1	9.1 kΩ, 1%, Axial	Active	8,185	\$0.10	DigiKey
CF14JT1K00	1 kΩ, 5%, Axial	Active	710,261	\$0.10	DigiKey
3362P-1-504LF	500 kΩ Trimmer	Active	792	\$1.23	DigiKey
K104K15X7RF53L2	0.1 μF Ceramic	Active	34,360	\$0.27	DigiKey
TZ03Z500E169B00	10–60 pF Trimmer	Obsolete	0	—	—
ECA-1VHG101B	100 μF, 35 V Radial	Active	6,784	\$0.44	DigiKey

Discrete Semiconductors & Clocking

Part	Spec/Package	Status	Stock	Price	Source
1N914ATR	Switching Diode, Axial	Active	51,247	\$0.30	DigiKey
WP7113ID	5mm Red LED	Active	156,949	\$0.21	DigiKey
CSTLS16M0X53-B0	16 MHz Resonator	NFND	14,714	\$0.34	DigiKey

Connectors & Hardware

Part	Spec/Package	Status	Stock	Price	Source
112408	BNC Jack, R/A PCB	Active	152	\$5.45	DigiKey
FT232RL Breakout	USB-to-TTL Adapter	Active	High	\$5.25	ShillehTek
4828-3000-CP	28-pin Socket	Obsolete	0	—	—
A21-BK	Serpac Enclosure	Active	158	\$12.79	DigiKey
Inland Mini-USB	USB-A to Mini-B Cable	Active	High	\$2.99	Micro Center

Substitutes

For part	Substitute	Differences	Verified	Judgment
MCP6S22-I/P	MCP6S92-E/P	Higher bandwidth (10 MHz); better availability.	package + pinout	Acceptable
TZ03Z500E169B00	GKG60015	12–60 pF (vs 10–60 pF); higher voltage (100 V).	package + range	Acceptable

For part	Substitute	Differences	Verified	Judgment
4828-3000-CP	ED281DT	Standard 300 mil DIP socket.	28-pin, 300 mil width	Acceptable

Instructors should verify substitute footprints against the PCB layout before procurement.

Other dependencies

- **Microcontroller Firmware:** Critical; available at [dpscope.freevar.com](#). Must be flashed to dsPIC before assembly.
- **PC Application:** Legacy Windows software; Windows 11 compatibility requires testing with "Compatibility Mode."
- **FTDI Drivers:** Standard VCP drivers required from [ftdichip.com](#).
- **Configuration File:** MPROG file required to set the specific serial number for hardware recognition.
- **Fabrication:** 2-layer PCB (approx 4.25" x 2.25"); status not checked.

Watch list

- **dsPIC30F2020 Stock:** DigiKey stock is extremely low (7 units); procurement should be directed to Mouser.
- **Resonator Status:** The CSTLS16M0X53-B0 is "Not For New Designs." While current stock is high, future cycles may require a transition to SMD resonators with board modifications.
- **Software Hosting:** Original [dpscope.com](#) has moved to a free hosting domain; mirror all binaries locally to prevent loss of access.