CARIMO TECHNOLOGIES

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ML Kit — AI Education Platform

TECHNICAL DATASHEET · MACHINE LEARNING KIT



A compact, **sensor-rich Machine Learning platform** — a real-world data generator for hands-on AI education. A **DC motor with quadrature encoder, current sensor, and 3-axis MEMS accelerometer** connect to a Windows PC over USB; hot-swap magnetic load disks and a vibration knob inject real disturbances. Generates live data across **12 signal channels** — speed, current, voltage, and 3-axis vibration — for machine learning, deep learning, statistics, signal processing, and time-series analysis. **No-code AIMX Standard software included**; AIMX Advanced and the CARIMO ML Notebooks are available as add-ons (purchased separately).

HARDWARE SPECIFICATIONS

Processor	ARM Cortex-M4F @ 84 MHz, FPU; 12-bit ADC	**Load system**	Hot-swap magnetic load disks of varying magnet count
Motor	PMDC; quadrature encoder	**Vibration ctrl.**	PWM-adjustable knob; 0–100% intensity; signal modulation
Speed accuracy	±8 RPM; up to ~3200 RPM (full supply)	**Data channels**	**12 live signals:** speed, current, power, voltage (×3), 3-axis accel., magnitude, intensity, PWM
Current sensor	±3 A range; **±2.5% accuracy**; real-time power monitoring	**Connectivity**	USB 2.0 to a Windows 11 PC; timestamped CSV export
Vibr. sensor	3-axis MEMS accel. (±2 g); **1.0 mg resolution**	**Power**	12 V DC adapter; 230 V AC mains input
Motor driver	Integrated H-bridge; up to 3.5 A peak	**Enclosure**	Durable ABS, tabletop, portable

SOFTWARE OPTIONS

Software package	Interface	Needs MATLAB?	Content	Status
AIMX Standard No-code · ML Kit CSV	No-code app	**No** — standalone	6 experiments · 25 ML models	✓ INCLUDED
AIMX Advanced No-code · any CSV	No-code app	**No** — standalone	6 experiments · 92 ML models	★ ADD-ON
CARIMO ML Notebooks Data Exploration · Classification · Regression · Clustering	MATLAB® Live Scripts	**Yes** — your own MATLAB® + toolboxes	4 notebooks · 68 experiments	★ ADD-ON

AIMX Advanced and the CARIMO ML Notebooks are add-ons, each purchased separately from CARIMO.

★ AIMX ADVANCED — ADD-ON

92 ML models — 42 classification · 40 regression · 10 clustering; same 6 experiments, expanded models; accepts any external CSV; integrates the MATLAB® Classification & Regression Learner apps. No-code, standalone. **Purchased separately.**

◆ CARIMO ML NOTEBOOKS — ADD-ON

Four MATLAB® Live Scripts — **Data Exploration, Classification, Regression & Clustering** — **68 guided experiments** on the ML Kit's data; needs your own MATLAB®. **Purchased separately**; see the CARIMO ML Notebooks brochure.

WHAT'S INCLUDED

- ✓ ML Kit hardware (PMDC motor + encoder + sensors)
- ✓ 12 V DC power adapter + USB cable
- ✓ 1-year hardware warranty
- ✓ Hot-swap magnetic load disks
- ✓ User manual
- ✓ AIMX Standard software (no-code · 6 expts · 25 ML models)

▶ YouTube **Watch ML Kit in action** · https://youtu.be/wGhVKplrRZ8

Software. The kit ships with **AIMX Standard** (no-code; copy-protected; Windows 11; ML Kit CSV data only) — 5 apps, 6 experiments, 25 ML models; works out of the box. **AIMX Advanced** (no-code add-on) expands to 92 models and accepts any external CSV. For code-based teaching, the **CARIMO ML Notebooks** — four MATLAB® Live Scripts with 68 guided experiments — run on the kit's data in the customer's own MATLAB®. All add-ons are purchased separately from CARIMO; see each product's software datasheet or brochure for full details.

Developed at **IIT Bombay** · "Remote-Triggered Labs" (MHRD / NMEICT) · Prof. (Retd.) Nataraj Paluri · DPIIT & MSME recognised

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