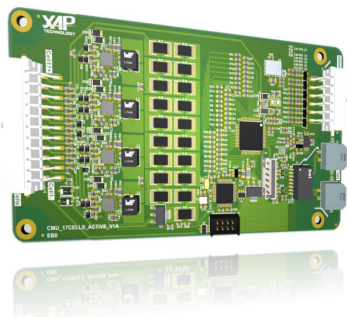


CMU-117 Active



PRECISION AND SAFETY AT THE HEART OF YOUR BATTERY

The XAP CMU is the cornerstone of battery management, monitoring and balancing each cell with precision while securely transmitting data to the BMU.

Its modular and scalable design adapts to anything from compact 48 V batteries to high-voltage packs up to 800 V, with no hardware changes required. Each unit operates autonomously, with built-in acquisition, regulation, and diagnostics.

Built on motorsport engineering principles, the CMU delivers robustness, compactness, and rapid response. Redundant measurements, traceable configurations, and isolated CAN interfaces ensure continuous operation even under extreme conditions.

CMU-117 Active: 17-cell bidirectional active balancing, local energy management, and dynamic voltage deviation passivation.

METROLOGICAL RELIABILITY, GALVANIC SAFETY, OPERATIONAL MODULARITY

ISOLATED CELL VOLTAGE:

Filtered and oversampled channels with integrated micro-controller

TEMPERATURE MONITORING:

6 NTC inputs + 2 internal sensors, digitally calibrated.

CELL BALANCING:

Bidirectional active

ISOLATED COMMUNICATION:

Galvanic CAN/TPL up to 3000 V, with ESD protection and common-mode filters.

DATA STORAGE:

Serial number, hardware configuration, and calibration parameters

AUTOMATIC IDENTIFICATION:

Dynamic addressing for easy wiring and in-field reconfiguration

SAFETY & SELF-CHECK:

Closed-loop control (pumps, valves, fans, heaters)

ACTIVE BIDIRECTIONAL BALANCING:

Transfers energy between cells instead of dissipating heat

OPTIMIZED PERFORMANCE:

maximized usable energy and reduced charging time

ENERGY EFFICIENCY:

Recycled balancing energy lowers power losses

LOW MAINTENANCE AND HIGH RELIABILITY:

Suitable for both automotive and industrial environments





► ELECTRICAL SOLUTIONS & POWERTRAIN:: **CMU-117**

FUNCTIONAL OVERVIEW

Voltage measurement	17 independent channels (0 – 5 V/cell), precision ± 2 mV. Galvanic isolation 3 kV
Voltage range	0 – 5 V per cell / 60 V total
Temperature monitoring	6 external NTC + 2 internal sensors (–20 to +80 °C). Local overheat detection & warning $\Delta T > 5$ °C
Active balancing	Bidirectional DC/DC converters, up to 4 A per cell (charge / discharge). Continuous energy transfer between cells.
Balancing current	4 A max per cell (active mode)
Microcontroller	Real-time control of acquisition & balancing loops
Memory & traceability	Memory 512 kB for calibration, logs & event storage.
Power supply	DC BUS input
Communication	1 TPL or CAN-FD isolated bus, CRC 16 bits + watchdog / timeout monitoring
Isolation	3000V galvanic isolation (CAN / logic / power domains)
Protections	ESD diodes, transient suppressors, open-wire detection, thermal shutdown, over/under voltage monitoring
Diagnostics	Start-up self-test, CRC, watchdog, fault flags

ENVIRONMENT & COMPLIANCE

Operating T° range	–40 °C to +85 °C
IP Rating	IP40 (bare board)
Vibration/shock	Automotive-grade (IEC 60068-2-6 / -27)
EMC/CEM	Compliant with UNECE R10 / ISO 11452 standards
Safety standards	ISO 26262 ASIL-B (CMU level) / UNECE R100 / R136 compliant
Reliability	> 13 000 h continuous operation
Maintenance	Calibration and firmware update via CAN or USB interface

MECHANICS

Dimensions	127 × 70 × 10 mm
Weight	≈ 30 g

REFERENCE

PS0550	CMU-117 Active
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