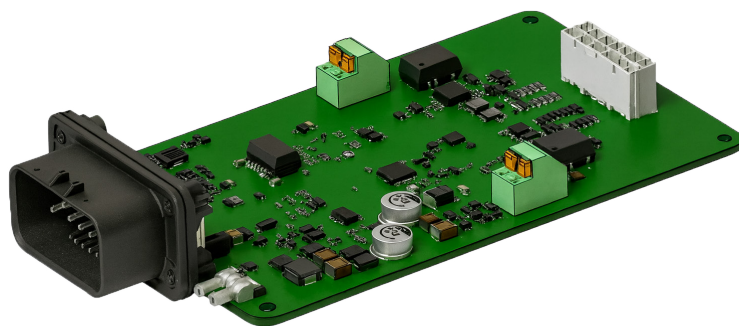


RELAY 500 ELECTRONIC BOARD



A SMART DUAL POWER CONTACTOR CONTROL BOARD

At XAP Technology, we do not chase innovation — we build it, layer by layer, through precision, discipline, and intent. Energy is our language: one that demands silence, control, and respect for every detail.

Our engineers, from electronics to software and mechanics, work as a single team with a single aim — to design systems that not only perform, but protect, anticipate, and endure.

The Relay 500 electronic board is the central control unit of the Smart Relay 500 (SR-500) system developed by XAP Technology. It drives up to two electromechanical power contactors rated for 500 A / 900 V DC, while integrating all safety, measurement, and diagnostic features required for modern high-voltage architectures.

It accepts a wide supply range (7 – 75 V DC) and automatically adapts the relay coil command voltage (12 V or 24 V) through an internal boost converter.

XAP TECHNOLOGY — CRAFTED INTELLIGENCE FOR HIGH-VOLTAGE SYSTEMS.

CORE INTELLIGENCE FOR HIGH-VOLTAGE CONTROL

DUAL CONTACTOR CONTROL:

Drives two 500 A / 900 V DC contactors with sequenced activation, ensuring smooth and reliable switching

ADAPTIVE POWER COMMAND:

Integrated boost converter automatically generates 12 V or 24 V coil voltage from any 7–75 V input — perfect for multi-architecture compatibility.

REDUNDANT VOLTAGE SUPERVISION:

Dual isolated sensing chains continuously monitor both sides of each contactor, detecting welded or misaligned contacts in real time.

PRECISION MEASUREMENT:

Isolated Hall-effect current sensing and ± 1 % HV measurement accuracy provide transparent control of every ampere.

EMBEDDED SAFETY LOGIC:

Anti-rollover algorithm and inertial detection (6-axis IMU) instantly open relays in case of abnormal tilt or impact.

SECURE INTELLIGENCE:

On-board microcontroller with 512 kB non-volatile memory logs all events — commands, voltages, inrush peaks — with full traceability.

CYBER-PROTECTED FIRMWARE:

Authenticated, signed, and rollback-secured updates ensure tamper-proof operation.

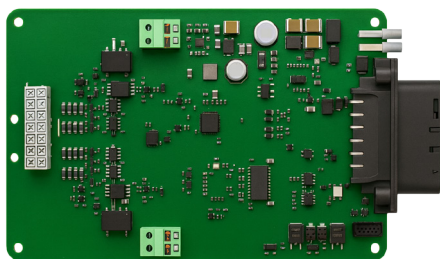
COMMUNICATION-READY:

CAN-FD, RS-485 (Modbus), USB, and Ethernet interfaces enable seamless system integration and diagnostics.

SCALABLE DESIGN:

From standalone OEM PCB to integrated module inside the SR-500 housing, the Relay 500 Board adapts to your application — from retrofit to industrial fleets.





► RELAYS & SENSORS: RELAY 500 ELECTRONIC BOARD

TECHNICAL SPECIFICATIONS

Input voltage	7V to 75V DC
Relay coil voltage	12V or 24V (auto-selected)
Switching capacity	500 A nominal / 600 A peak @ ≤ 900 V DC
Voltage sensing	Dual isolated channels (pre / post relay)
Current sensing	Hall-effect isolated, analog conditioned
Microcontroller	Yes
Non-volatile memory	512 kB Mmemoire (config + logs)
Inertial sensor	6-axis IMU
Interfaces	CAN-FD / RS-485 / USB 2.0 / Ethernet 10/100
Isolation voltage	1.5 kV (logic $\Leftrightarrow$ HV)
Power consumption	≤ 400 mA @ 12V

REFERENCE

PS0508	RELAY 500 ELECTRONIC BOARD
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MECHANICS

PCB dimensions	120 x 80 mm / 1.6 mm thick
Temperature	-40 °C to +85 °C
Humidity	5% to 85%
Weight	≈ 80 g

INTEGRATION

Board-only (OEM)	Stand-alone PCB for integration in an Electro-Box or sub-battery assembly. Direct connectors for CAN/RS-485 and sensing.
Casing (SR-500)	Sealed IP67 module combining relay board + precharge + current sensor. Includes buttons, LEDs and automotive connectors.
System compatibility	Fully interoperable with XAP BMU / BMS / NT-Logger and calibration tools.

SAFETY

Functional safety	ISO 26262 ASIL-B / C
EMC / ESD compliance	UNECE R10 / ISO 11452