⚠️ CRITICAL SAFETY WARNING AND COMPREHENSIVE DISCLAIMER
READ THIS ENTIRE DOCUMENT BEFORE USING THIS PRODUCT

1. INTENDED USE AND APPLICATION RESTRICTIONS
1.1 Permitted Applications
The SynapsePDM power distribution module is designed and intended EXCLUSIVELY for the following applications:

Motorsport Racing: Track-only vehicles competing in sanctioned motorsport events on closed circuits where professional safety personnel and equipment are present
Off-Highway Use: Vehicles operated exclusively on private property, never on public roads, highways, or streets
Research and Development: Laboratory testing, academic research, and technology development in controlled environments
Educational Purposes: Teaching and learning about automotive electronics, embedded systems, and power distribution
Prototype Development: Proof-of-concept and feasibility testing for future product development

1.2 Explicitly Prohibited Applications
This product shall NOT be used in:

❌ Road-Legal Vehicles: Any vehicle required to comply with FMVSS (USA), ECE regulations (Europe), or equivalent standards in any jurisdiction
❌ Public Road Operation: Any vehicle operated on public roads, streets, highways, or areas accessible to the general public
❌ Passenger Transport: Vehicles carrying passengers, especially for hire or commercial purposes
❌ Commercial Operations: Delivery vehicles, taxis, buses, or any commercial fleet operations
❌ Safety-Critical Systems: Applications where failure could reasonably result in death, personal injury, or severe property damage
❌ Medical Applications: Any medical device or system
❌ Aviation: Aircraft or unmanned aerial vehicles
❌ Marine Vessels: Commercial or passenger-carrying watercraft
❌ Industrial Machinery: Where failure could cause workplace injury
❌ Autonomous Vehicles: Self-driving or partially automated vehicles
❌ Emergency Vehicles: Police, fire, ambulance, or other emergency response vehicles
❌ School Buses or Child Transport: Any vehicle used to transport minors

2. SAFETY STANDARDS AND CERTIFICATIONS
2.1 Non-Compliance with Safety Standards
This product has NOT been developed in accordance with, and does NOT comply with:

ISO 26262 - Road vehicles functional safety standard (any ASIL level)
IEC 61508 - Functional safety of electrical/electronic/programmable systems
MISRA C:2012 - Guidelines for the use of C language in critical systems
AUTOSAR - Automotive Open System Architecture
ASPICE - Automotive Software Process Improvement and Capability Determination
SAE J1939 or ISO 11898 CAN safety protocols
UN ECE Regulations - European vehicle safety standards
FMVSS - Federal Motor Vehicle Safety Standards (USA)
ADR - Australian Design Rules
GB Standards - Chinese vehicle safety standards

Any national or international automotive safety standard

2.2 Missing Safety Features
This product lacks critical safety features expected in automotive-grade systems:

No ASIL-rated microcontroller or safety certification
No hardware redundancy or fail-operational capability
No certified functional safety architecture
No systematic capability per ISO 26262
No independent safety assessment or audit
No formal verification and validation process
No safety case or hazard analysis documentation
No EMC/EMI testing to automotive standards (CISPR 25, ISO 11452)
No environmental qualification (AEC-Q100 or equivalent)
No production quality management system (IATF 16949)

2.3 Software Limitations
The software has significant limitations:

Contains violations of MISRA C coding standards
Uses Arduino framework with dynamic memory allocation (prohibited in safety-critical systems)
No systematic code coverage or structural testing
No static analysis certification
No formal requirements traceability
May contain undefined behavior, race conditions, or buffer overflows
No certified compiler toolchain
No configuration management per safety standards

3. KNOWN RISKS AND LIMITATIONS
3.1 Potential Failure Modes
Users must be aware that this device may experience:

Overcurrent Protection Failure: May not reliably protect against overcurrent conditions
Short Circuit Response: Shutdown may be delayed or fail entirely
Thermal Management: Inadequate cooling may cause thermal shutdown or fire
Software Crashes: Firmware may hang, crash, or behave unpredictably
CAN Communication Failure: Loss of communication may occur without warning
Electromagnetic Interference: May malfunction in electrically noisy environments
Power Supply Sensitivity: May fail or reset with voltage fluctuations
Memory Corruption: Data corruption due to lack of ECC memory
Timing Violations: Real-time requirements may not be met
Diagnostic Failures: Fault detection may miss critical failures

3.2 Environmental Limitations
This device has NOT been tested for:

Automotive temperature extremes (-40°C to +125°C)
Vibration and mechanical shock per automotive standards
Humidity and condensation resistance
Salt spray and corrosive environments
UV exposure and weathering
Extended operational lifetime (10+ years)

3.3 Known Bugs and Issues
This is experimental software and hardware with known and unknown defects. Bugs may cause:

Unexpected behavior or output states
Loss of control over connected loads
Corruption of stored data or configuration
Communication protocol violations
Resource exhaustion or memory leaks

4. REGULATORY AND LEGAL COMPLIANCE
4.1 Type Approval and Certification
This product has NOT received and will NOT receive:

Type approval in any jurisdiction (EU, USA, UK, etc.)
Individual Vehicle Approval (IVA)
Small Series Type Approval
Whole Vehicle Type Approval (WVTA)
Any governmental certification for road use

4.2 Regulatory Status

This product does NOT meet requirements for road vehicle components
Installation may void vehicle warranty or insurance
May violate local regulations governing vehicle modifications
Users are responsible for compliance with all applicable laws
Installation must NOT contravene emissions control regulations
This product must NOT be used to bypass, defeat, or render inoperative any emissions control system
Use must NOT interfere with vehicle safety or pollution protection features
Violations of emissions regulations may result in substantial fines and penalties
Users are solely responsible for ensuring legal compliance in their jurisdiction

4.3 Insurance and Liability

Product liability insurance does NOT cover this device
Vehicle insurance may be voided by installation of non-certified components
No recall support or field monitoring is provided
No post-market surveillance is conducted

5. DISCLAIMERS AND LIMITATIONS OF LIABILITY
5.1 No Warranty
THIS PRODUCT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO:

Warranties of merchantability
Fitness for a particular purpose
Non-infringement
Accuracy or reliability
Freedom from defects or errors
Uninterrupted operation
Compatibility with any specific application

5.2 Disclaimer of Liability
TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW:
The authors, contributors, maintainers, and distributors of this product SHALL NOT BE LIABLE for any:

Direct damages: Including but not limited to property damage, personal injury, or death
Indirect damages: Including loss of profits, business interruption, or loss of data
Consequential damages: Arising from any use or inability to use this product
Punitive damages: Regardless of the nature of the claim
Legal costs: Including attorney's fees and court costs
Third-party claims: Including claims by passengers, other road users, or property owners

This limitation applies regardless of whether liability is based on:

Breach of contract
Breach of warranty
Negligence or gross negligence
Strict liability
Product liability
Any other legal theory

5.3 Assumption of Risk
BY USING THIS PRODUCT, YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT:

You have read, understood, and agree to be bound by this disclaimer
You assume ALL risks associated with the use of this product
You understand the limitations and potential hazards described herein
You will use this product only for permitted applications
You will conduct appropriate testing and validation before deployment
You will implement additional safety measures as necessary
You will comply with all applicable laws and regulations
You release the authors and contributors from all liability
You will defend and indemnify the authors and contributors against any claims arising from your use
This agreement is governed by the laws of [Your Jurisdiction]

6. USER OBLIGATIONS
6.1 Testing and Validation
Users MUST:

Conduct thorough testing appropriate to their application
Perform failure mode analysis
Implement fault monitoring and safe states
Test under worst-case environmental conditions
Validate all safety-critical functions
Document all testing procedures and results
Retain qualified personnel for testing and validation

6.2 Safety Measures
Users MUST implement:

Hardware-level protection circuits (fuses, circuit breakers)
Independent watchdog monitoring

Thermal protection and cooling
Proper electrical isolation and grounding
Overcurrent and short-circuit protection
Redundant safety systems where applicable
Regular maintenance and inspection procedures
Operator training and safety documentation

6.3 Documentation
Users MUST maintain:

Installation records and configuration settings
Test results and validation reports
Maintenance logs and inspection records
Incident reports and failure analysis
Modification and version control history

6.4 Compliance Responsibilities
Users are solely responsible for:

Ensuring legal compliance in their jurisdiction
Compliance with all emissions control regulations (EPA, CARB, Euro standards, etc.)
Ensuring installation does not defeat, bypass, or render inoperative emissions systems
Ensuring installation does not interfere with vehicle safety features
Obtaining any required permits or approvals
Meeting insurance requirements
Implementing safety measures appropriate to their application
Training operators and maintenance personnel
Monitoring for failures and implementing corrective actions
Understanding that violations of emissions laws may result in substantial fines, penalties, or criminal prosecution

7. MODIFICATIONS AND DERIVATIVE WORKS
7.1 GPL-3.0 License
This project is licensed under GPL-3.0, which permits modification and redistribution. However:

Any modifications REMAIN subject to this disclaimer
Derivative works MUST include equivalent safety warnings
You MUST NOT represent modified versions as certified or approved
You MUST clearly identify modifications and maintain change logs
You accept responsibility for any modifications you make

7.2 Safety Warnings for Distributors
If you distribute this product or derivative works:

You MUST include this complete disclaimer
You MUST NOT make any safety claims or certifications
You MUST clearly mark the product as experimental
You accept responsibility for downstream users
You agree to defend and indemnify original authors

8. GEOGRAPHIC RESTRICTIONS

8.1 Export Control
This technology may be subject to export control regulations. Users are responsible for compliance with:

US Export Administration Regulations (EAR)
International Traffic in Arms Regulations (ITAR)
EU Dual-Use Regulation
Wassenaar Arrangement
Any applicable export control laws

8.2 Regional Restrictions
This product may not be legal for use in all jurisdictions. Users must verify:

Local vehicle modification regulations
Electronics and emissions standards
Safety certification requirements
Insurance and registration requirements

9. EMISSIONS AND ENVIRONMENTAL COMPLIANCE
9.1 Emissions Control Systems
CRITICAL WARNING: This product must NOT be used in any manner that:

Bypasses emissions control systems
Defeats emissions control devices
Renders emissions control systems inoperative
Interferes with pollution protection features
Modifies emissions-related calibrations in violation of law
Causes a vehicle to exceed legal emissions limits

9.2 Regulatory Frameworks
Users must comply with all applicable emissions regulations, including but not limited to:
United States:

Clean Air Act (CAA) - 42 U.S.C. § 7401 et seq.
EPA regulations - 40 CFR Parts 85, 86, 1036, 1037, 1065, 1066
California Air Resources Board (CARB) regulations
State-specific emissions requirements
Tampering prohibitions under 42 U.S.C. § 7522(a)(3)

European Union:

Euro emissions standards (Euro 6/VI and later)
Type-approval regulations - EU 2018/858
Real Driving Emissions (RDE) requirements
National implementation of EU directives

United Kingdom:

Road Vehicles (Construction and Use) Regulations
MOT emissions testing requirements
Type approval regulations following EU exit

Other Jurisdictions:

Local, state, provincial, and national emissions laws
Import/export emissions compliance
Regional air quality regulations

9.3 Penalties for Non-Compliance
Violations of emissions regulations can result in:
United States:

Civil penalties up to $4,819 per non-complying vehicle per day (as of 2024)
Civil penalties up to $48,192 per defeat device
Criminal prosecution for knowing violations
Mandatory corrective action and recalls
Stop-sale orders
Loss of manufacturer certification

European Union:

Fines up to €30,000 per vehicle
Type-approval withdrawal
Market surveillance enforcement
Criminal prosecution in some member states

Other Consequences:

Vehicle registration denial
Failed emissions inspections
Insurance policy voidance
Resale value reduction
Potential personal liability

9.4 Motorsport and Off-Road Exception
Racing vehicles operated exclusively on closed circuits and off-road vehicles operated only on private property may be exempt from some emissions regulations in certain jurisdictions, but users must:

Verify exemption status with local authorities
Ensure vehicle is never operated on public roads
Maintain documentation of racing/off-road use
Comply with venue-specific environmental requirements
Follow sanctioning body rules (FIA, SCCA, etc.)

9.5 User Responsibility
YOU ARE SOLELY RESPONSIBLE FOR:

Understanding emissions laws in your jurisdiction
Ensuring your application complies with all regulations
Maintaining emissions control systems
Passing required emissions inspections
Bearing all costs and consequences of non-compliance

The authors and contributors:

Do NOT provide emissions compliance advice

Are NOT responsible for user violations of emissions laws
Make NO representations about emissions compliance
Disclaim ALL liability for emissions-related penalties or enforcement actions

9.6 Statement of Intent
This product is designed for motorsport and off-road applications where emissions regulations may not apply or are specifically exempted. It is NOT intended, designed, or marketed for use in evading, bypassing, or defeating emissions control systems.
Any use that violates emissions regulations is:

Prohibited by this disclaimer
Not supported by the authors or contributors
Undertaken entirely at the user's risk and liability
Subject to potential legal action by regulatory authorities

10. CONTACT AND SUPPORT
10.1 No Support Obligation
The authors and contributors are NOT obligated to provide:

Technical support or assistance
Bug fixes or updates
Safety updates or recalls
Warranty service or repairs
Consultation or advice

10.2 Community Support
Support, if any, is provided by the community on a volunteer basis:

No response time guarantees
No accuracy or completeness guarantees
No liability for advice or suggestions
Users accept all risks from community recommendations

10.3 Reporting Issues
Users are encouraged (but not required) to report:

Bugs and defects via GitHub issues
Safety concerns (though no formal response is guaranteed)
Improvement suggestions

11. ACKNOWLEDGMENT AND ACCEPTANCE
BY DOWNLOADING, INSTALLING, USING, MODIFYING, OR DISTRIBUTING THIS PRODUCT, YOU ACKNOWLEDGE THAT:
☑ You have read and understood this entire disclaimer
☑ You agree to all terms and conditions stated herein
☑ You will use this product only for permitted applications
☑ You assume all risks associated with use of this product
☑ You release all authors and contributors from liability
☑ You understand this product is NOT certified for road use
☑ You will NOT use this product to violate emissions regulations
☑ You will NOT bypass, defeat, or render inoperative any emissions control systems

☑ You will comply with all applicable environmental and safety laws
☑ You will not hold anyone associated with this project liable for damages
☑ You accept sole responsibility for safe operation and compliance
☑ This agreement is legally binding
IF YOU DO NOT AGREE, DO NOT USE THIS PRODUCT.

12. SEVERABILITY
If any provision of this disclaimer is found to be unenforceable or invalid, that provision shall be limited or eliminated to the minimum extent necessary, and the remaining provisions shall remain in full force and effect.

13. ENTIRE AGREEMENT
This disclaimer constitutes the entire agreement between users and the authors/contributors regarding the use of this product and supersedes all prior or contemporaneous understandings regarding such subject matter.

14. CHANGES TO THIS DISCLAIMER
This disclaimer may be updated at any time without notice. Continued use after changes constitutes acceptance of the modified terms. Users should review this disclaimer periodically.

Version: 3.0
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Applies to: SynapsePDM and all associated documentation, hardware designs, and software

⚠️ FINAL WARNING ⚠️
THIS PRODUCT CAN CAUSE SERIOUS INJURY OR DEATH IF MISUSED.
DO NOT USE IN ROAD VEHICLES.
USE AT YOUR OWN RISK.