

INTELLECTRIC SOLUTIONS



PEDAL GENERATOR CONTROL UNIT (PCU)

The PCU is at the heart of the human-machine interaction: It converts pedal force into electrical energy and forms the basis for precise, software-defined control.

- Customizable pedal feel (OEM-specific)
- End-to-end cadence control (pedal > motor)
- High efficiency through direct electrical conversion

SERIAL HYBRID SYSTEM (iSHS)

The iSHS combines a generator, motors, a battery, and a control system into a chainless, scalable drive system for professional applications.

- Integrated regenerative braking > energy efficiency during operation
- Instantaneous motor response & high torque
- Stable handling even under heavy loads
- Scalable for different vehicle classes

iSHS TURNKEY-READY SYSTEM (TR-KIT)

The TR-Kit is a fully integrated system solution for series production – ready to deploy.

- Fully tested complete system
- Reduced Time-to-Market
- IoT, diagnostics, and OTA updates integrated

The **INTELLECTRIC Serial Hybrid System (iSHS)** is a fully integrated serial hybrid drive system that converts mechanical pedal power entirely into electrical energy and transmits it directly into propulsion.

A low-maintenance, chainless direct drive with high efficiency and precise control – ideal for electric cargo bikes in professional use.

For OEMs, this means maximum design freedom, minimal maintenance, and the highest level of system integration.

HAVE WE GOT YOUR ATTENTION?

For inquiries, pricing, and more information, visit us at www.dynamic-drives-giessen.com



DYNAMIC DRIVES Giessen GmbH
Siemensstrasse 7 | 35394 Giessen | DE
mail@dynamic-drives-giessen.com
www.dynamic-drives-giessen.com

Rechtsform: GmbH | Sitz: Giessen
Registergericht: HRB 9846
Ust-ID-Nr.: DE360236320
Geschäftsführer: Oliver Rüspeler,
Frank Tscherney, Anton Papenfuss



INTELLECTRIC DRIVE SYSTEM

Chainless high-performance drive system for **HeaduPed*** (Heavy Duty Pedelec)



*phon: Headjuped - Heavy Duty Pedelec

INTELLECTRIC POWERTRAIN



The **INTELLECTRIC Serial Hybrid System (iSHS)** – the scalable, chainless drive system for the next generation of professional electric cargo bikes.

- ✓ **CHAINLESS DRIVE**
no wear, minimal maintenance
- ✓ **SERIES HYBRID ARCHITECTURE**
maximum design freedom and flexible integration for OEMs
- ✓ **END-TO-END TORQUE CONTROL**
precise, natural driving feel
- ✓ **TURNKEY SYSTEM SOLUTION**
fast integration & reduced development time
- ✓ **HIGH SYSTEM PERFORMANCE (UP TO 190 NM)**
ideal for heavy-duty applications
- ✓ **UNIFIED SOFTWARE ARCHITECTURE**
Seamless CAN orchestration – no interface complexity, one system
- ✓ **RELIABLE OPERATION**
in demanding real-world applications

INTELLECTRIC COMPONENTS

Pedal Generator (iGEN)

Power: 250 W
Torque: up to 40 Nm
Nominal voltage: 48 V DC
Precise control of pedal feel
Dynamic power control



In-Wheel Motor (iM1500)

Max. torque: up to 190 Nm
Rated power: 125 W (pedelec compliant)
Nominal voltage: 33,9 V_{RMS}
Assists up to 25 km/h
Immediate response & strong performance and outstanding



Battery (AES SuperPack 2.0)

System voltage: 48 V DC
Capacity: 1,440 Wh (scalable up to 5.76 kWh)
Multi-battery system supported
Optimized for heavy-duty use



Control System (iCON / CAN Orchestration)

All ECUs communicate over SAE J1939 with standardized CAN identifiers
CAN timeouts ensure deterministic fault handling and safe-state transitions
Centralized control of all components
OTA updates & remote diagnostics
Automotive safety architecture



INTELLECTRIC DRIVE SYSTEM OVERVIEW



SYSTEM	PEDAL GENERATOR CONTROL UNIT (PCU)	SERIAL HYBRID SYSTEM (iSHS)	iSHS TURNKEY-READY SYSTEM (TR-KIT)
COMPONENTS	iGEN generator + Pedal Control Unit (PCU) + Interface to the CAN system	iGEN Generator + Pedal Control Unit (PCU) + 2x iM1500 wheel hub motors + Motor Control Units (MCU) + CAN-based communication (without display and controls)	Complete iSHS System + TR-Kit + Display (small) + Controls + Wiring Harness for the components incl. in this stack + IOT & Software Integration + Interconnection Box + Relay Control Hub
BATTERY INCLUDING	no	optional	optional
APP/ IOT	no	optional	yes
TARGET GROUP	OEM, research, integration	OEM, vehicle development	Series-production vehicles, fleets
COMPATIBLE	EN 17860	EN 17860	EN 17860
SYSTEM VOLTAGE	48 V / cadence-only / no torque sensor	48 V DC	48 V DC
COMMUNICATION	CAN 2.0B, 250 / 500 kbit/s, J1939-style option	CAN bus (automotive-compatible)	CAN + BLE + LTE
SAFETY CONCEPT	IP65 (higher optional)	redundant sensor technology, software-based power limitation	in accordance with ISO 26262 (ASIL-B orientation)
TOTAL WEIGHT	approx. 5,85 kg	approx. 24,33 kg	approx. 29,69 kg
FEATURES	Dynamic cadence control and moment blending between iGen and BRM	Recuperation controllable via brake lever or coaster brake	All components are assembled and tested as a complete system, ensuring compatibility and minimising field issues.



LOW-MAINTENANCE & CHAINLESS DIRECT DRIVE WITH 250 W SYSTEM POWER RATING



SERVICE-FRIENDLY PLUG & PLAY OF DRIVE COMPONENTS



MODULAR & ADAPTABLE INTEGRATION INTO VARIOUS VEHICLE TYPES & HEAVY DUTY PEDELEC USES