

# eKit48

# We electrify your mobile machines



# How much time does electrification take?

Reduced CO<sub>2</sub> emissions not only require emission-free technologies and increased system efficiency – what's really key is implementing innovative concepts quickly to achieve measurable progress in environmental protection.

Electrification in particular often takes a lot of time, because the development process is lengthy and complex. To help you save valuable time to market, we have revolutionised this approach.

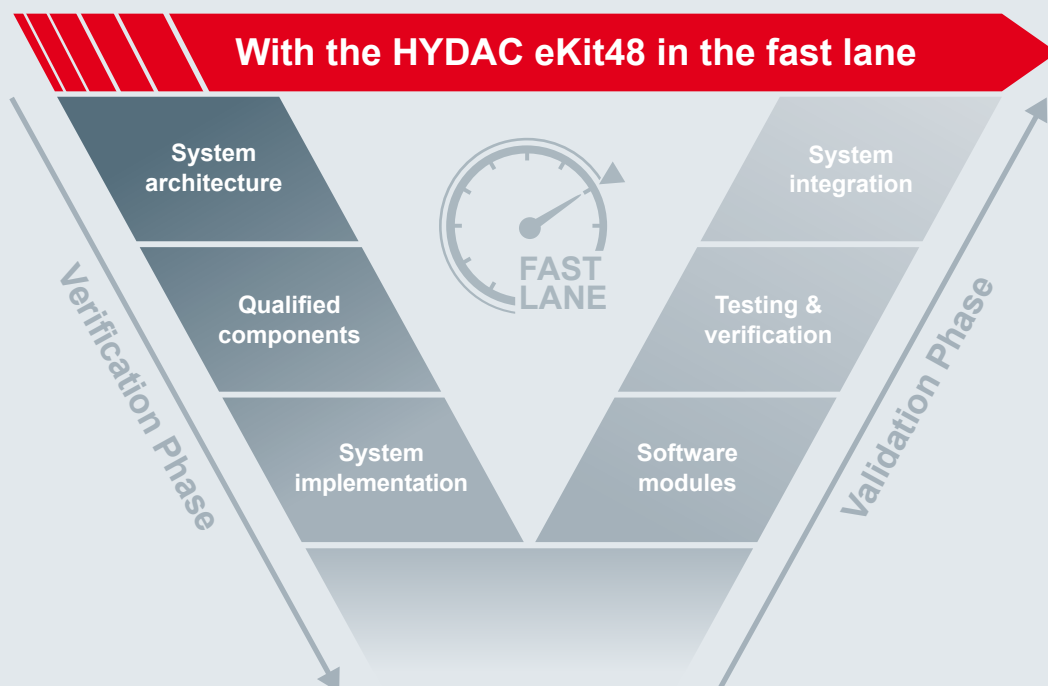
## Fast, faster, standard system

### Reduce development times and get off to an emission-free start

With a conventional V-model approach, the complexity of the individual system packages quickly leads to high resource input and investment costs. The time factor in particular plays a major role, because each individual component and its behaviour must be evaluated and tested in the system.

With HYDAC you save yourself the detours: our 48 V standard system eKit48 offers you standardised, pre-configured modules for your individual system design. Thanks to intelligent configuration strategies, you can integrate the system into your existing system architecture immediately. A wide range of applications can be covered with the flexibility of the eKit: from individual power take-offs to the electrification of the entire machine.

Read on to find out how you too can save up to 4 years development time.



# eKit48: ready for your prototype application

## From 0 to 100 % electric

The eKit48 offers you an innovative complete package that makes the transition from a conventional combustion engine to an electrified machine quick and easy.

### Why exactly should you opt for the modular electrification kit from HYDAC?



#### Safe & user-friendly

Skilled workers are in short supply – we also took this into account when developing our eKit48. Because operating it is child's play. The otherwise essential high-voltage training is not required and no separate training is necessary. This allows you to concentrate on your core business.



#### Flexible & standardised

Our eKit48 offers you maximum flexibility thanks to its standardised yet modular design. This unique combination allows you to effortlessly adapt and seamlessly integrate the system to any system architecture. With prototypes that are already available and highly compatible components, you will receive a solution that suits your needs.



#### From a single supplier

With HYDAC, you no longer have to turn to third-party suppliers: Our innovative modular system relies on components that we develop and produce in-house. We offer you concentrated know-how and dedicated support with the drive specialist ENGIRO, advanced battery systems from Invenox and innovative control systems and operator interfaces from TTControl as part of the company group.

**HYDAC**

**TTControl**  
HYDAC INTERNATIONAL

**INVENOX**  
ADVANCED BATTERIES

**ENGIRO**  
HYDAC INTERNATIONAL

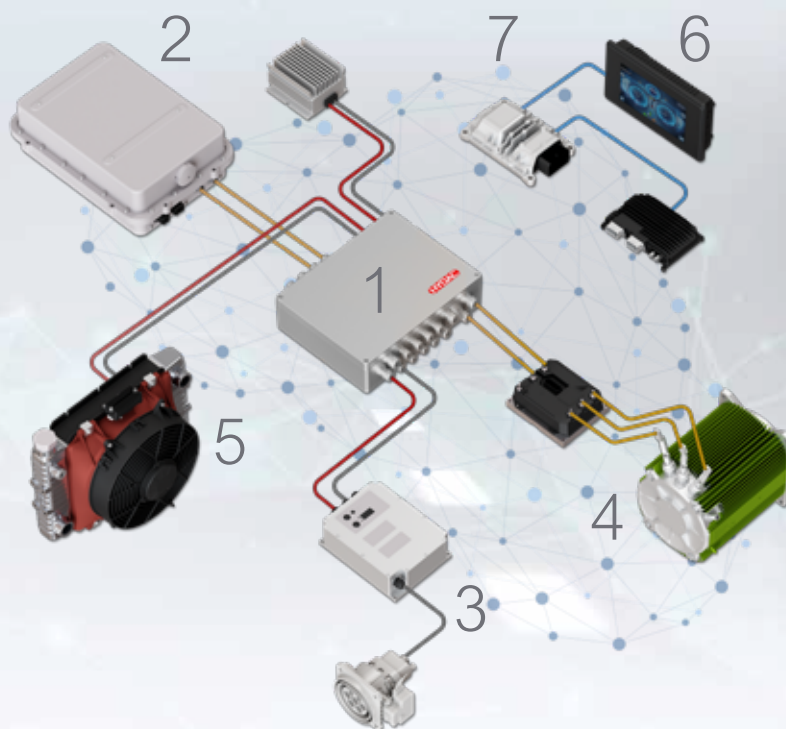
# The eKit48 modular system

## Modular. Standardised. Compact.

Select from preconfigured, highly compatible components that integrate seamlessly into your system architecture.

Thereby we support you in the selection of the most suitable combination.

Get to know all the modules of our eKit48 in detail now.



## Power Distribution Unit

### The energy manager for the eKit48

In the eKit48, all components are connected to the Power Distribution Unit. It's the main component responsible for distributing the energy in the system safely and efficiently. Whether it's low voltage or high voltage – we adapt the PDU to the dimensions of all the components. As part of this, we attach great importance to well thought-out power line installation. With standard cable harnesses or customised solutions, we create the optimum power distribution.

#### You can choose between two models:

- Mini PDU: 1 motor / up to 2 batteries
- Maxi PDU: 2 motors / up to 4 batteries

#### Technical data:

- Mini: 230 x 330 x 110 mm / Maxi: 310 x 400 x 110 mm
- Continuous load: 500 A, short-term up to 1,000 A
- Standardised interfaces to the cable harness with individually fused current paths



# Batteries & charging devices

## LIOS 48 battery system

### Innovative, intelligent and powerful

Many manufacturers join battery cells together with high heat input, which makes cells age faster. With our patented contact system, Invenox clamps the cells right between two aluminium core PCBs. Elastic and highly conductive materials ensure vibration-resistant contact, while pole contact cooling effectively dissipates heat. Defective battery cells are easy to replace thanks to the reversible clamp connection, which makes our modules recyclable. For maximum failure protection, our battery management system monitors the condition on two separate levels simultaneously.

### Choose between two sizes and cell types:

- POWER for especially powerful performance:  
LIOS 48S P (60 Ah / 3 kWh) or LIOS 48L P (90 Ah / 4,5 kWh)
- ENERGY for an especially long service life:  
LIOS 48S E (80 Ah / 4 kWh) or LIOS 48L E (120 Ah / 6,1 kWh)

### Technical data:

- Dimensions: 398 to 511 x 370 x 176 mm, 28 to 40 kg depending on the variant
- Cycle stability: > 3,000
- Certifications: IP-6k7, UN38.3, ECE R-10, CE declaration



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## Charging management

### With interfaces compatible for use worldwide

Wallboxes, Schuko and CEE connections have different requirements. What they all have in common is the safety of the charging process. In line with the guidelines of the Low Voltage Directive and EMC, we supply you with pre-configured modules. As an important component in our eKit48, we have the right solution for every connection, worldwide. Because our charging technology covers the power ranges from 1.5 to 12 kW and is compatible with supply voltages from 100 to 240 Vac. Equipped with an ECSE controller, a CAN interface and an EVSE compatible communication interface (SAE-J1772 & EN-61851-1), our charging management is in use worldwide.

### Technical data:

- Up to 3.3 kW charging power per device, parallel operation of 2 devices is possible
- Working temperature: -20 °C to +70 °C (full performance up to 50 °C)
- Certification: CE / cUL / IP65 / UNECE R10



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# Drives & thermal management

## Drive sets

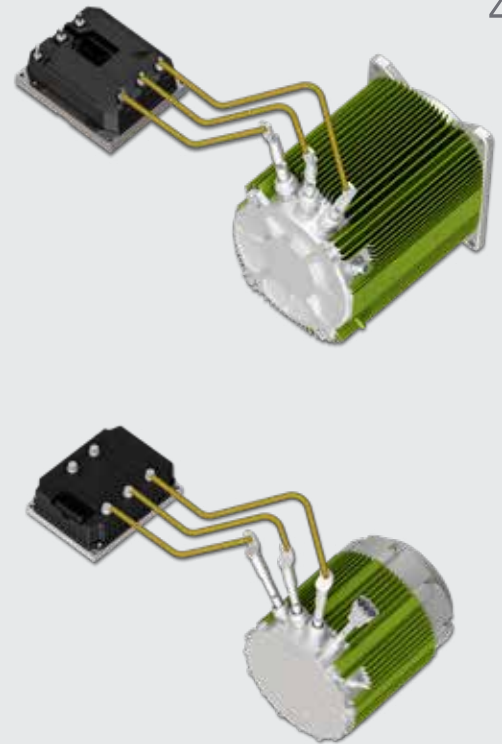
### Turnkey sets for fast implementation

In addition to series motors, we also offer complete drive sets consisting of a motor, a perfectly coordinated converter and a matching cable harness. All sets are tested and parameterised on our own drive test benches. They are delivered with a complete parameter set and are ready for use as soon as they have been installed in the application.

Our drive set variants in the eKit48 series cover applications with high speeds and high torques. With air or water cooling and all kinds of flange and shaft types, we have the right solution for every application.

#### Technical data:

- Drive speeds up to 8,000 rpm & torques up to 200 Nm
- Protection class: IP 65
- Certifications: CE, EN 60034



## Mobile, variable-speed air coolers

### For needs-based cooling without energy loss

We developed our AC-M air-cooler for the special challenges in electrification. The AC-M series with a DC motor is a cost-efficient solution which cools e-motors and inverters in electric vehicles. Our focus is on a compact, variable-speed design. This means that the cooler only uses as much energy as is necessary. Noise and vibrations are also kept low as our solution cools in a needs-based way. Another advantage: the cooler is quick and easy to install in the eKit48.

#### Technical data:

- Protection class IP68 (IP6K9K on the whole fan)
- Compatible with various oil types as well as water glycol mixtures
- Axial fan in suction or blowing version



# Software & controllers

## Software

### Mix & MATCH – certified modules for a quick start

MATCH is our control software for mobile machines. It consists of function modules which can be combined in a custom way. These are certified and tested – this saves time and is one thing above all: safe. Because we think about functional safety right from the start. For reliable communication in a system, the right cable harness is vital as well as software. With our communication cable harness, we also offer 12 or 24 V interfaces for external consumers. What this means for you: The software and cables are ready to go and now all that's missing is your individual requirements.

#### Technical data:

- Exchangeable and expandable function module
- Multi-controller capable
- With a standard or custom cable harness



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## Controllers

### Software interfaces with solid protection

For the eKit48 to work flawlessly, it needs well thought-out controllers. And we protect these from the inside and the outside. Thanks to the robust design, you are perfectly equipped for the harsh conditions in off-highway applications. But they also cut a fine figure on the inside thanks to numerous safety certificates. Developed by TTControl as part of the HYDAC group, this powerhouse delivers maximum flexibility in machine development, up to 7 CAN bus connections and easy code reusability within all products.

#### Technical data:

- Operating temperature -40 °C to +85 °C
- Infineon XC 22xx micro controller, 80 MHz, 768 kB int. Flash, 82 kByte int. RAM 8 kByte EEPROM
- Certifications: ISO 26262 / EN ISO 13849 / ISO 25119 / ISO 19014



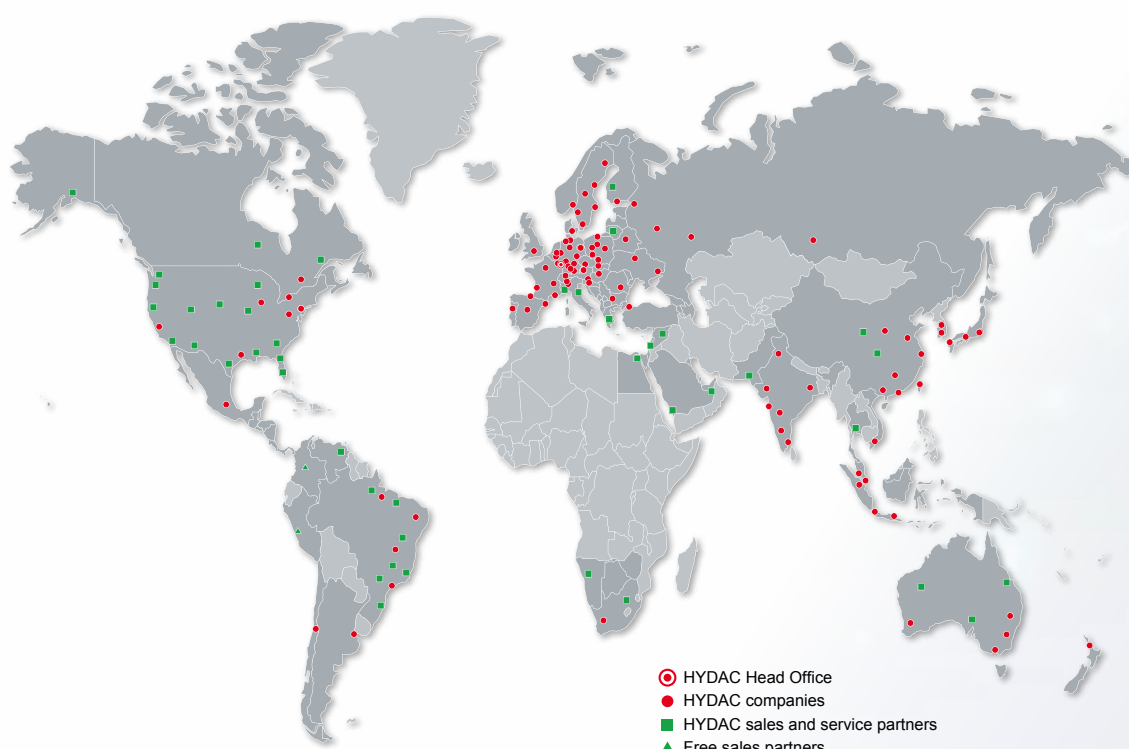
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## In the fast lane with HYDAC

HYDAC offers the best of both worlds. With over 60 years of expertise as a fluid technology, hydraulics and electronics company and the dynamism of a start-up, we devote our energies to the technologies of the future. From hydrogen applications to the electrification of mobile machines.

10,000 employees, 50 HYDAC subsidiaries and more than 500 sales and service partners ensure that HYDAC is on hand to help you as a reliable partner worldwide. The delivery programme extends from components through subsystems right up to complex drive units with closed-loop-control for mobile and stationary machines and systems. We also offer our customers a large range of technical services relating to HYDAC fluid engineering for hydraulic oil, lubricants, coolants and water.

Rely on our expert global network and our top quality standards.



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### Note

The information contained in this brochure refers to the operating conditions and applications described. Please contact the relevant specialist department in the case of deviating applications and/or operating conditions. We reserve the right to make technical changes.