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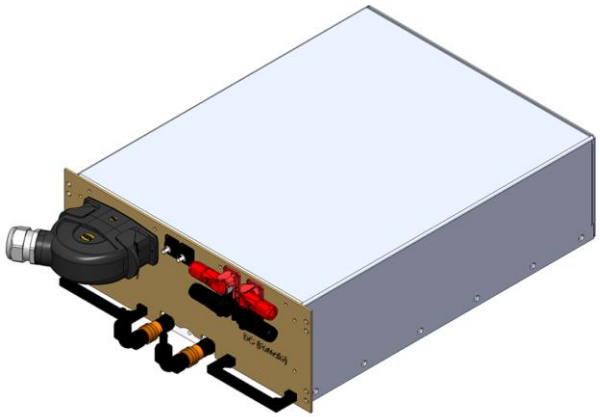
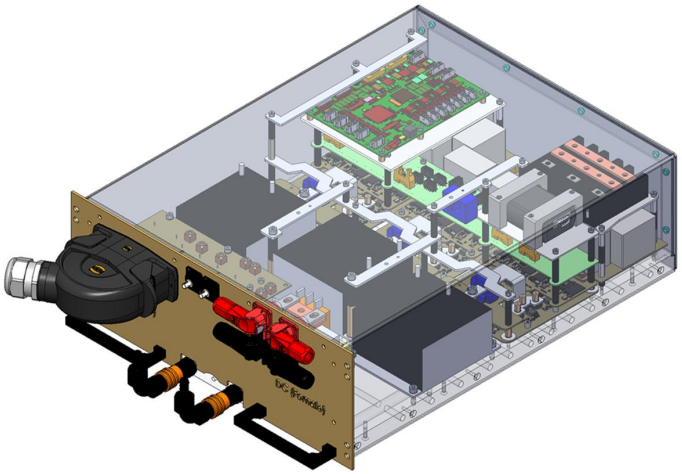
Brochure

Temes Power Module Line





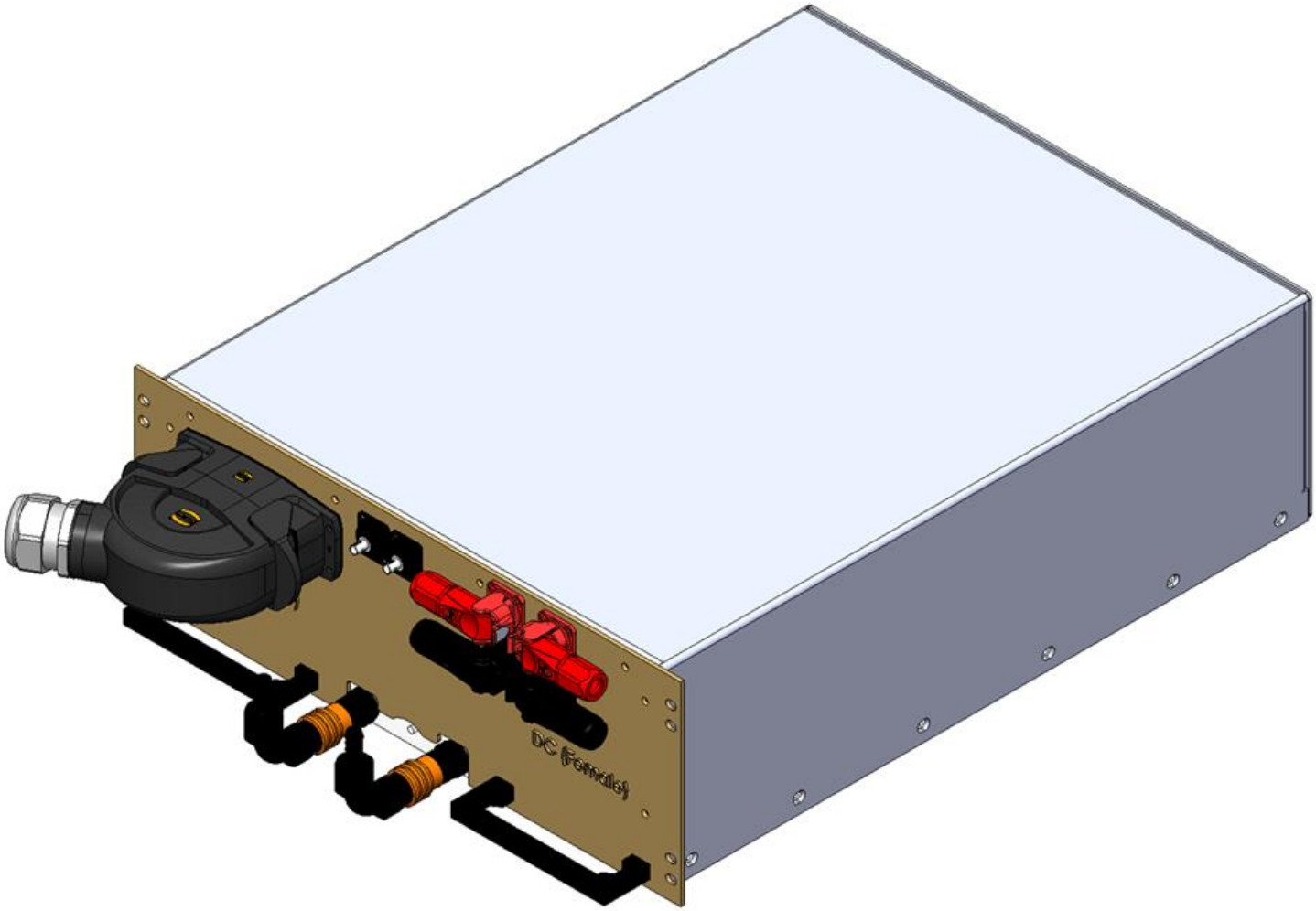
Temes Power Module Line

- Active Front End Module (AFE) 65kW
- Inverter Module 65kVA
- DC-DC Module (galvanic Isolation) 65kW

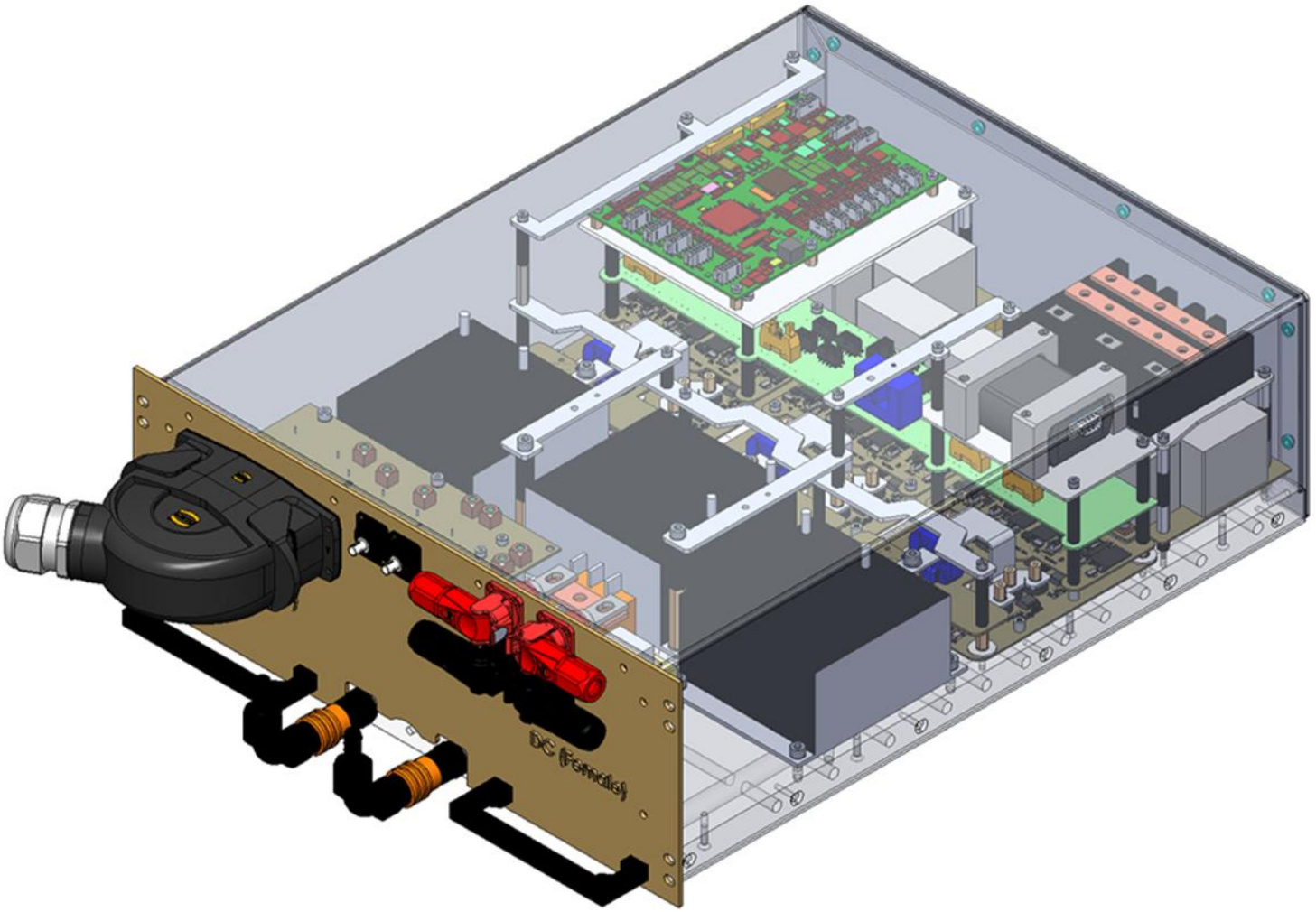
  With integrated Step Down Chopper for:

  - Battery Charger
  - PV with MPPT (Direct connection of PV Modules)

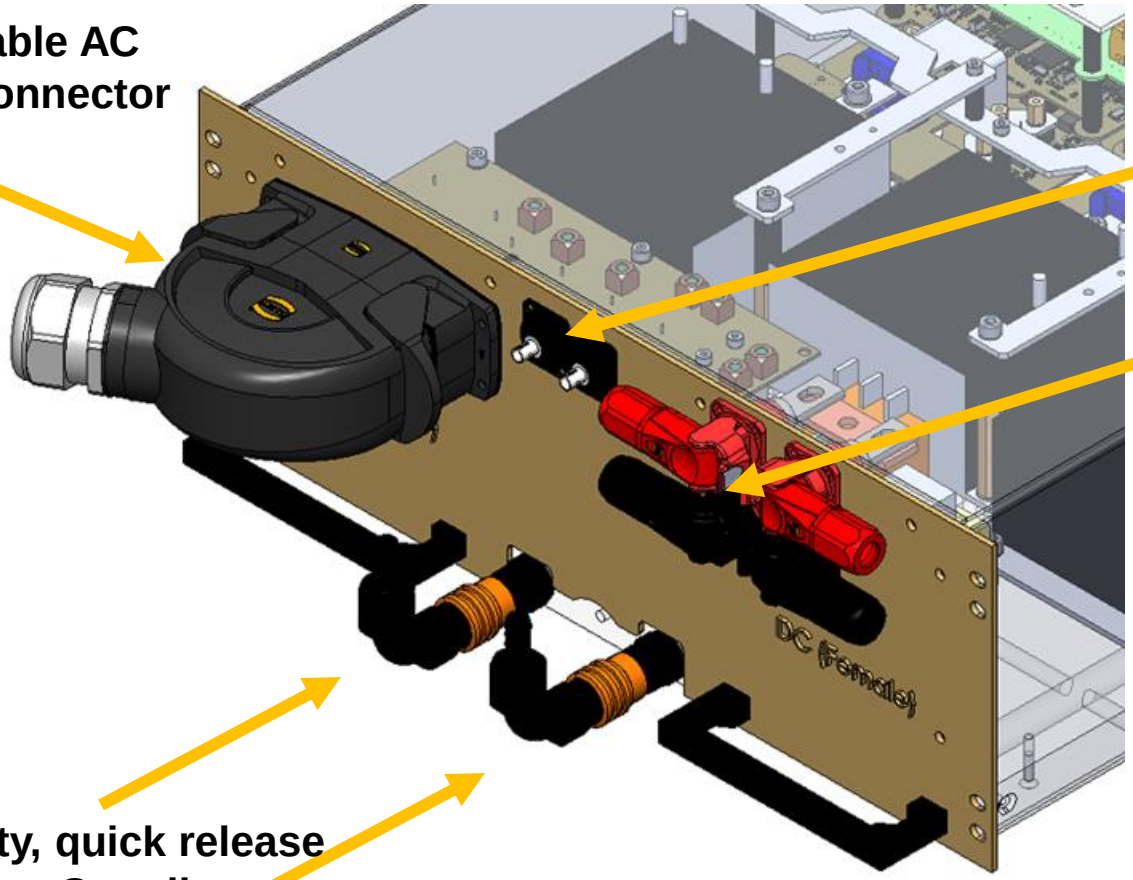
Module I



Module II



Interfaces



Configurable AC & Signal Connector

Opto-Interface (Option)

Hi Voltage, quick release DC Connectors (1 x 2 or 2 x 2)

Hi Quality, quick release Water Coupling

Main Customer Benefits

Many common parts for excellent service and ease of repair

The entire Temes power module line is internally constructed using a large number of identical subassemblies:
The following key subassemblies are identical through out all topologies (AFE, Inverter, DC-DC and PV Module)

- Driver Boards
- Main IMD Power Electronic segments
- Control and Monitoring Hardware
- Interface Connectors

This substantially improves handling, spare parts stocking and ease of repair of a system

Configurability

Each Module can be used stand alone, or up to 6 Modules each can be operated in parallel,
resulting in a max. system power of > 350kW.

Each four AFE / DC-DC modules can be operated in series as an option (increased isolation strength).
This allows operation at nominal 3kV DC systems.

Application

Industry, Rail and Defence

Standards and Environmental Conditions

All Power Modules meet the follwing standards and environmental conditions:

Description	Requirement	Standard
Storage temperature	-33° C … +71° C	
Operating temperature	-32° C … +60° C	
Degree of contamination	Level 2	EN 60664-1
Isolation	2.5kV AC RMS 1min, Increased for 1.5 and 3kV applications	
Power Electronics, general		VG 96968-1
Sea level altitude, operation	2.000 Meter	Comment: 3.000 Meter with reduced performance
Maximum transport height	16.000 feet (4.876m) without pressure compensation	Comment: No electrolytic capacitors used
Humidity	Humidity 3% to 100% including condensation during storage and commissioning.	
Vibration	MIL-STD-810-H, Method 514.8 Kat. 4	MIL-STD-810-H
Shock (Functional load)	Longitudinal: ± 4g Lateral: ± 1,5g Vertical: ↓1,3g ↑1,3g	
Shock (Fracture load)	Longitudinal: ± 8,0g Lateral: ± 3,0g Vertikal: ↓7,52g ↑3,03g	
Mains feedback		DIN EN 61000-3-2, DIN EN 61000-3-12
EMI		According to customer requirements.

AFE / Inverter Module

The AFE module is identically to the inverter module in terms of hardware. The software is individual.
This substantially improves handling, spare parts stocking and ease of repair of a system

The AFE / Inverter Modules comprise the following functional blocks:

- High frequency 3-phase AFE Topology with sinusoidal current draw
- Clock frequency >30kHz (No audible noise)
- Built-in micro-processor control- and regulation
- CAN Interface
- Integrated filter and EMI filter
- Dimension 19“ slide in unit; four height-units; Depth: 475mm
- Weigt: 50kg

Further technical data:

Input:	3 x 400V AC (1-phasse 230V AC on request) +/- 10%; 47 … 63Hz
Power:	65kW / 75kW continuous/peak power
Power Factor:	> 0,98 (AFE operation)
THD:	< 5% (Inverter operation)
Efficiency:	> 97.5% (AFE & Inverter operation)
Cooling:	Liquid Cooling, max. 60° C liquid cooling temperature

DC-DC Module with galvanic isolation

The DC-DC Modules comprise the following functional blocks:

- High frequency full bridge topology
- Clock frequency >50kHz (No audible noise)
- Built-in micro-processor control- and regulation
- CAN Interface
- Integrated filter and EMI filter
- Integrated 60kW chopper for battery charging and operation at PV (Photo Voltaic)

Further technical data:

- Input / output: 600 … 820 V DC, adjustable
- Power: 60kW continuous/peak power
- Efficiency: > 95%
- Dimensions: 19“ slide in unit; four height-units; Depth: 475mm
- Weight: 55kg
- Cooling: Liquid Cooling, max 60° C liquid cooling temperature

Options & Accessories

Options:

- Increased insulation strength for serial module operation (1,500V DC & 3,000V DC nominal voltage)
- Opto Interface
- Inverter, AFE and DC-DC Modules bi-directional

Accessories:

- Hi Voltage Power Supply, 24VDC, 2kW
- Trickle Charger for Hi Voltage Battery

Temes – Contact

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