



TruConvert

*Optimized for
renewable
energy systems*

Modular system technology for the grid connection of renewable energy sources and energy stores



TRUMPF Hüttinger
generating confidence


Ecological and safe energy supply.

Electrical energy is the foundation of modern life. Integrating decentralised, green alternatives to fossil fuels and the full development of remote regions are of key importance. Battery storage systems are among the core components of this transformation. They store valuable wind and solar energy, making it available the moment it is needed. The inverter that efficiently supplies and withdraws energy to and from storage plays a significant role in this process.

TruConvert modular – the trendsetting concept for battery manufacturers, system integrators and users

TruConvert, the new generation of bidirectional and modular inverters from TRUMPF Hüttinger is suitable for use with any battery, no matter if lithium-ion-, second life-, or redox-flow battery. Thanks to the modular structure and shared direct current link, various stores and different sources can be viewed and operated entirely independently of each other. For example, the battery is charged directly by the photovoltaic system via a DC-DC converter, avoiding a detour through the grid with at least two additional inverters and corresponding efficiency losses.

Numerous customer-specific configurations allow the battery storage system to be consistently adapted to the respective requirements. The modules in 19" standard housings are also particularly easy to integrate into existing battery storage systems, and they can be combined with photovoltaic or wind energy plants to create a trendsetting system. Nothing stands in the way of expanding the battery storage system with additional energy sources or also an e-charging station. The isolated network capability of our inverters also supports the configuration of self-sufficient grid segments with black start capability and decentralised energy systems through grid forming.

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- ✓ Unlimited options
+ straightforward system design
 - ✓ Maximum energy benefit
 - ✓ High security of investment
 - ✓ Long lifespan
+ high availability
 - ✓ Low service costs

Modular system

01 Unlimited options and straightforward system design for battery manufacturers and system integrators

Uncomplicated commissioning of the power electronics

Your industrialization times are considerably reduced! The system is readily adaptable, distinguishes itself with fast commissioning and easily integrates into your system design.

Low power losses and optimal battery design

The modular design allows for physical connection of the DC-DC converters to the stacks. Additionally, the DC-DC converter and AC-DC inverter can be positioned separately.

Output scalable as desired

Possibilities are endless due to parallel connection of the components: from small units, for instance 25 kW, to midsize batteries of 100 kW and more.

Low investment costs and higher efficiency thanks to access to the DC link

The direct current link is accessible to you, enabling the efficient integration of additional system components such as photovoltaics, charging columns, hydrogen synthesis and more. This eliminates inverters between the source and storage.

Highly dynamic for load changes in the millisecond range

The concept for your success.

DC-DC converter, AC-DC inverter and system control: everything from one source and perfectly coordinated. With outstanding characteristics:

Trendsetting technology combined with a robust industrial design guarantees a high efficiency factor across a broad power range with a long service life. Trendsetting communication combined with the integrated monitoring functions also allows control of the battery storage system from anywhere in the world.

02 Maximum energy benefits

High efficiency, also in the partial load range

Only components required to accept or deliver the output are operated.
This is made possible by the modular design!

03 High security of investment for system integrators and users

Security of investment

Sell a future-proof investment to your customers: no retrofitting necessary when grid forming is required.
No conversion when additional applications are to be covered with the existing installation base.
In short: no retrofitting on the way to a decentralised energy supply. You set up a storage system that grows along with future requirements!

Future-proof

Your unique selling point for project tenders! The standardised 19" modules grow along with the development of your storage system. This ensures you are ready for future requirements.

04 Long service life and high availability for the user

Long service life

Your formula for greater energy efficiency:
 $\text{Lower cooling costs} = \text{higher efficiency} = \text{reduced power loss} = \text{reduced expenditure for cooling} = \text{longer service life}$ since the aging of the semiconductor components is considerably reduced.

Redundant continuous operation

You have the highest system availability:
Thanks to the parallel connection of multiple components, your system remains operational at all times!

05 Low service costs for battery manufacturers and users

Minimised service costs and a long lifespan

We guarantee totally reduced unplanned downtime with an industrial grade design made in Germany.
Short MTTR thanks to a worldwide service network.

I 4.0-ready

Real-time data monitoring, remote diagnostics, optimal operation:
You can connect all components to your cloud via a secure OPC UA.
The trendsetting fast communication protocol on an Ethernet basis supports huge data flows in real time.
Machine learning based on the data and optimised maintenance intervals are supported as well.



One inverter for all applications.

The possible applications are unlimited. Worldwide!



AC-DC converter

01 100% flexibility in your possible applications

One for all:

For parallel mains or isolated network operation, for a 400 volt or 480 volt network, 50 Hz or 60 Hz operation, seamless islanding or micro-grid, grid forming, district storage or network stabilisation, replacement of diesel generators, energy supply for remote regions or increasing the own consumption of photovoltaics.

02 Low replacement part inventories and straightforward service

Fast and easy handling: just one inverter type supplies your needs worldwide.
That immensely simplifies service as well.

03 Out-of-balance capability and reactive power compensation

The inverter can serve as a current and voltage source. It is out-of-balance capable (up to 100 % compensation of 1 phase), can be operated in full 4-quadrant operation (reactive power compensation) and is suitable for connection to any network (360 – 530 V, 50/60 Hz).

Developed for use with any battery.

You obtain the greatest flexibility for your battery development:

Smaller stacks can also be operated thanks to the low-voltage connection of RFBs.

Since this also results in reduced shunt currents, the round-trip efficiency simultaneously improves and reduced cell corrosion increases the service life of your battery.



DC-DC converter

01 Your TCO is significantly reduced!

The DC-DC converter makes a higher round trip efficiency possible since the occurrence of shunt currents is reduced.

02 Straightforward system design

Minimisation of risks in your RFB development:
You can operate smaller stacks with low voltages.

03 Ability for zero-volt

Eliminate an additional battery charger for forming and depth discharge.

04 Larger available capacity of the battery

Thanks to the depth discharge capability, the entire battery capacity is available to you.

05 Safe separation of the grid and battery

Connect the system directly to the low-voltage side. A transformer for potential separation is not needed. This is enabled by high-frequency potential separation on the low-voltage side.

Key technical data.

Would you like more information? No problem!



Send an e-mail enquiry to our experts

Technical Data of TruConvert System Control

General data

Compatible slave modules	TruConvert AC 3025 / TruConvert DC 1008
Number of connectable slave modules	1 – 16
Slave module addressing	Individual / broadcast

Interface

User interface	Ethernet (Modbus TCP / UDP, Web Server), 2 x RJ-45 (switched)
System interface (module connection, backplane)	RS-485 (RJ-45)
Aux supply	24 V ± 10 %, 250 mA

Environment

Operation temperature	-20 °C – 65 °C (23 °F – 150 °F)
Storage, transportation temperature	-20 °C – 80 °C (-5 °F – 175 °F)
Humidity	5 % – 90 %
Cooling	natural
Maximum installation altitude (above sea level)	2000 m

Dimensions, protection class, weight

Dimensions w x h x d	435 mm x 44.5 mm x 253mm (17.1" x 1.8" x 10")
Weight	< 500 g
Protection Degree	IP 20

Standards

EU directives (CE)	
Low voltage directive	2014/35/EU
Electromagnetic compatibility directive	2014/30/EU
EN 62040-2	2006/AC: 2006 class 1
EN 62109-1	2010
Safety (C, US)	
CSA C22.2	No. 107.1 – 16
UL 1741 / 62109-1	Second Edition / National Differences
IEC 62109-1	First Edition

Technical Data of TruConvert DC 1000

Electrical data - DC link connection	
DC link voltage	850 V \pm 10 % (balanced to earth)
Isolation	max. 500 V against earth

Electrical data – Battery Connection	DC 1008	DC 1010
Rated voltage	48 V	
Voltage range charge/discharge	0 V – 75 V	
Nominal charge / discharge current	167 A (30 – 48 V)	208 A (30 – 48 V)
Nominal power	8 kW (48 – 70 V)	10 kW (48 – 70 V)
Overload charge/discharge for 10 min	10 kW (48 – 70 V, max. 209 A)	-
Overload charge/discharge for 1 min	12 kW (48 – 70 V, max. 250 A)	-

General data	
Max. efficiency	97.4 %
CEC efficiency (48 V, 800 V)	96.7 %
Response time (step load 0 – 100 %)	< 10 ms

Interface	
Power connection DC link	Plugable
Power connections battery	M8 / M10 bolts
Aux supply	24 V \pm 10 %, 2 A
Communication interface	RS-485 (RJ-45)

Environment	
Operation temperature	-20 °C – 65 °C (23 °F – 150 °F)*
Storage, transportation temperature	-20 °C – 80 °C (-5 °F – 175 °F)
Humidity	5 % – 90 % (no condensation)
Cooling	Forced air, controlled
Noise emission	< 70 dB (max)
Altitude	Up to 2000 m (6562 ft) above sea level

*DC 1010 derating above 30 °C (86 °F) ambient temperature, DC 1008 derating above 40 °C (105 °F) ambient temperature

Dimensions, protection class, weight	
Dimensions w x h x d (with connectors)	216 mm x 132 mm x 515 mm (8.5" x 5.2" x 20.3")
Degree of protection	IP 20
Weight	12 kg (26.5 lbs)

Standards	
EU directives (CE)	
Low voltage directive	2014/35/EU
Electromagnetic compatibility directive	2014/30/EU
EN 62040-2	2006/AC: 2006 class 3
EN 62109-1	2010
EN 62109-2	2011
Safety (C, US)	
CSA C22.2	No. 107.1 – 16
UL 1741 / 62109-1	Second Edition / National Differences
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Technical Data of TruConvert DC 1030

Electrical data - DC link connection	
DC link voltage	850 V \pm 10 % (balanced to earth)
Maximum input power charge/discharge*	30 kW (max. 70 A)

* At 40 °C (105 °F) ambient temperature

Electrical data – Battery Connection	
Nominal DC voltage U_B	400 V
Nominal charge/discharge current	70 A
DC voltage range I_B , U_B , I_B or U_B charge/discharge	0 – 700 V
Initial charge/discharge (I_B settable)	0 V (max. 10 A)
Current I_B charge/discharge (I_B settable)	200 – 700 V (max. 70 A)
Voltage U_B float charge (U_B settable)	700 V

General data	
Max. efficiency	99.5 %
Response time (step load 0 – 100 %)	< 5 ms

Interface	
Power connection DC link	Phoenix Connectors
Power connections battery	Phoenix Connectors
Aux supply	24 V \pm 10 %, 2 A
Communication interface	RS-485 (RJ-45)

Environment	
Operation temperature	-20 °C – 65 °C (23 °F – 150 °F)*
Storage, transportation temperature	-20 °C – 80 °C (-5 °F – 175 °F)
Humidity	5 % – 90 % (no condensation)
Cooling	Forced air, controlled
Noise emission	< 70 dB (max)
Altitude	Up to 2000 m (6562 ft) above sea level

*Derating above 50 °C (115 °F) ambient temperature

Dimensions, protection class, weight	
Dimensions w x h x d (with connectors)	241.3mm x 89mm x 451 mm (1/2 19" x 3.5" x 18.55")
Degree of protection	IP 20
Weight	7 kg (15.43 lbs)



Technical Data of TruConvert AC 3025

Entire Device	AC 3025
Max. efficiency	98 %
Voltage supply	24 VDC \pm 10% / 8 A
Reaction time	< 10 ms

Mains Connection Data	
Mains voltage range	380 / 480 V \pm 10 %
Maximum permitted mains voltage	528 V
Mains frequency range	45 – 65 Hz
Nominal mains frequency	50 / 60 Hz
Charging / discharging nominal apparent power	25 kVA
Asymmetrical load	Up to 8.3 kVA / phase
Charging/Discharging power factor	-1 – 1
Nominal current for listed voltage	380 V: 38 A 400 V: 37 A 415 V: 35 A 440 V: 33 A 460 V: 32 A 480 V: 31 A
Overload capacity 125 % (10 min)	32 kVA
Overload capacity 150 % (1 min)	38 kVA
Excess current capacity 300%	114 A
Distortion due to harmonics in nominal power	< 5 %
Max. switch-on current	< nominal current

DC- link	
Nominal power	25 kW
DC- link nominal current at	750 V: 36 A, 800 V: 33 A, 850 V: 31 A, 900 V: 30 A 950 V: 28 A
Maximum output voltage	950 VDC, balanced to earth (deviations possible)

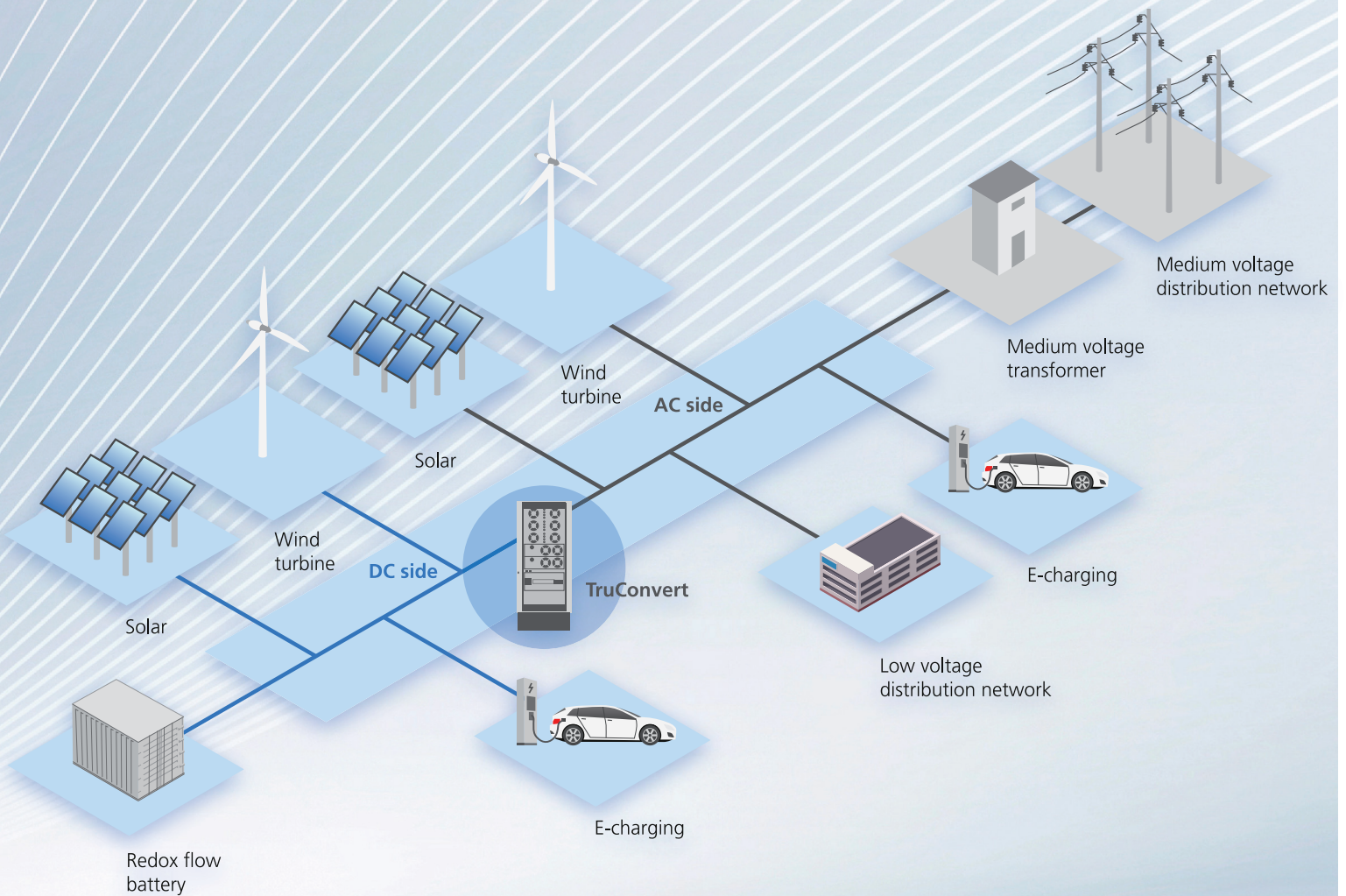
Interfaces	
DC link	PCB plug connector, 3-pin
24 V supply voltage (DC)	PCB plug connector, 2-pin
Mains power connection	L1, L2, L3, N, PE, PCB plug connector, 5-pin
Communication interfaces	2 x RS-485 (RJ-45)
Aux supply	24 V \pm 10 %, 8 A

Environment	
Operation temperature	-20 °C – 40 °C (23 °F – 104 °F)*
Limited power operation	40 °C – 65 °C (104 °F – 149 °F)
Storage / Transport	-20 °C – 80 °C (-4 °F – 176 °F)

*Derating above 40 °C (105 °F) ambient temperature

Dimensions, protection class, weight	
Dimensions w x h x d	437 mm x 129 mm x 500 mm (17.2" x 5.1" x 19.7")
Dimensions of front panel W x H	482 mm x 132 mm
Degree of protection	IP 20
Weight	27 kg (60 lbs)
Certification	UL1741SA 2nd Edition; IEEE 1547.1; VDE-AR-N 4105:2018-11; VDE-AR-N 4110:2018-11; TOR Typ A:2022-04; Tor Typ B: Version 1.2, 2022-04; EN 50549-1:2019-02; UNE 217002:2020; K62477-1 (2011-12); AS4777.2*; C10/C11; Denmark Typ A, Technical regulations 3.3.1 - 2024; Denmark Typ-B Technical regulations 3.3.1 – 2024*

Combined to a future-oriented system



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