Hybrid Power

AEP 10

Bidirectional DC/DC converter

- Innovative in energy storage & Power Electronics
- Custom-made solutions
- Complete solution: storage & Power Electronics
- Design and system integration

Features

- 6 kW converter, U_n 40V
- Current 150A
- Low ripple current
- Very low noise emission
- Bidirectional fully controlled H-bridge
- Step up and step down mode
- Binary and analog I/O
- RS 232 / CAN bus interface
- 24 Vdc Supply
- Air-Cooling

Applications

A selection of potential applications are:

- Generation of constant supply voltage for off-grid systems from variable input sources
- Charging and discharging of energy storage systems

Typical application field are:

- Fuel cell based energy storages
- Off-grid systems
- Renewable energy systems

Mechanical Data

Length x Width x Height
412 x 230 x 200 mm
Approx. 10 kg

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Technical Characteristics

Symbol	Parameter	Description	Value	Unit
	General			
P_R	Rated power	@U_{out} 40V	6	kW
F_r	Switching frequency		24	kHz
η_r	Efficiency	@P_r	>95	%
	Primary side			
U_{pr}	Input voltage range		0-80	V DC
$U_{in,\ max}$	Maximum voltage		80	V DC
I_{pr}	Maximum current		150	A
	Secondary side			
U_{out}	Output voltage range		0-80	V DC
$U_{p,max}$	Maximum voltage		80	V DC
I_{max}	Maximum current		150	A
	Power input			
	Control voltage	Nominal value range	24	VDC
			20 till 80	VDC
	Control current		<1	A
	Environment			
T_o	Operating temperature		-40 till 70	°C
$T_{storage}$	Storage temperature		-40 till 85	°C
	Protection degree		IP20	
	Interfaces			
	Communication	CAN / RS232 electrically isolated		
	Control signals	ON/OFF; Reset; Emergency stop		
	4 binary inputs	Electrically isolated High Low	 17 till 30 0 till 2	 V V
	4 binary outputs	Electrically isolated transistor switch I_{output} High Low	 50 16 till 29 0 till 2	 mA V V
	External measurement for current temperature	Voltage supply Signal current transformer I_{meas} temperature sensor (PT100)	± 15 ± 4 2,5	V V mA
	Cooling			
T_{amb}	Ambient temperature	Passive air cooling PWM controlled internal fan	<50 >50	°C °C

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Technical Features

The variety of input and output capabilities as well as configurable operation modes account for a multifunctional DC/DC converter which is suitable for a wide range of applications. Self-protection is covered through short circuit detection and overcurrent or overload shutdown.

AEP10 series converters are the right solution for integrated systems which combines charging and discharging of different types of energy storages with monitoring and control functionality. The available user interface PowerPanel assists in the adaption to customer needs and allows a detailed view of the device state.

Connections

Pin	Signal	Connector	Comment
	Communication interface		
	CAN	X1	CAN bus
	RS232	X2	Serial service interface
	Binary inputs	**X3**	
1..4	B_{in} 1..4*		Caution! Maximum input voltage 28V!
5	GND_{IO}		Ground extern
	Binary outputs	**X4**	
1	$+24V_{IO}$		Supply voltage for binary outputs
2..5	B_{out} 1..4*		Caution! Maximum output current 50mA!
6	GND_{IO}		Ground extern
	Current measurement	**X5**	
1	-15V		Negative supply voltage
2	GND		Signal-GND
3	A_{in} 2		Signal from current transformer
4	+ 15V		Positive supply voltage
	Temperature measurement	**X6**	
1	- I_{meas}		- measurement current
2	GND		- PT100
3	A_{in} 1		+PT100
4	+ I_{meas}		+ measurement current
	Power supply	**X7**	
1	$+U_B$		24V supply
2	GND		Ground for +24V supply
	Power terminals		
	DC out	X8	Output voltage
	DC in	X9	Input voltage

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Design Features

- Rugged
- Efficient cooling

Options

- Current control on primary or secondary side
- Additional available pre-charge unit
- Flexible configuration of control software e.g. current control or voltage control

Mechanical Data

Length x Width x Height:	412 x 230 x 200 mm
Weight:	10 kg
Enclosure:	IP20