

# Technical Information

PrimeSTACK

# 6PS0300R17KE3-3GH

power electronics in motion



**Zieldaten**  
**target data**

## Key data

3x 176A AC at 690V AC, forced air (fan not implemented)

## General information for:

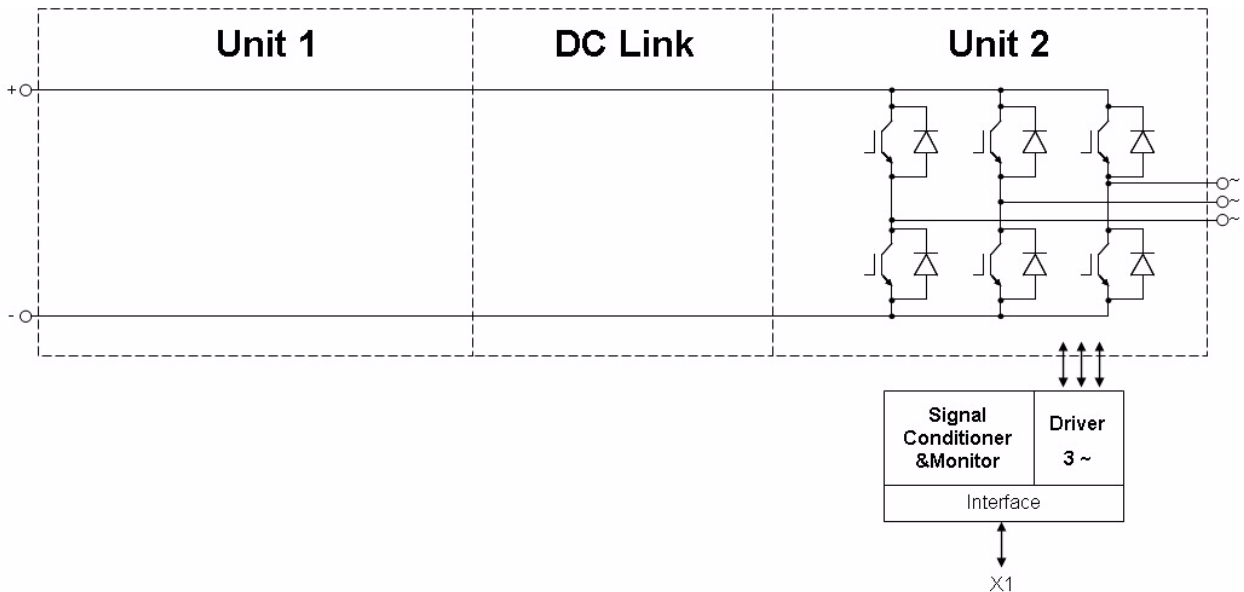
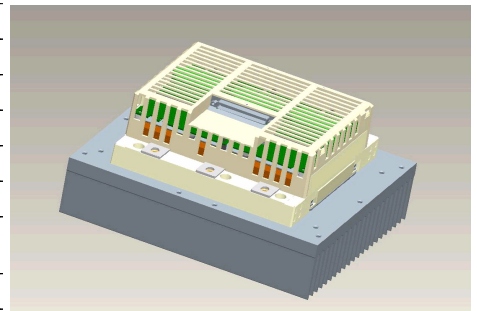
Stacks for various inverter application. Semiconductors, heat sinks, drivers and sensors included.

These are only technical data!

Please read carefully the complete documentation and maintain the proper design environment!

Especially note the EMC environment and the controller's functionality.

Topology	B6I
Application / Modulation	Inverter / Sine
Load type	resistive, inductive
Cooling	forced air (fan not implemented)
Market	common industrial, drives, power supply
Monitors	current, temperature
Semicond. (Unit 1)	none
DC Link	none
Semicond. (Unit 2)	IGBT 3x FF300R17KE3
Interface IGBT	electrical CMOS
Standards	EN50178, UL94, prepared for UL508C
Product ID (eupec)	t.b.d.
Mechanical drawing number	38000030
Electrical drawing number	6PS-C3-V-Rev03



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## Zieldaten target data

### Notes

**Overvoltage shutdown:**  
It must be realized by the customer.

**Overvoltage and Overcurrent shutdown reaction time:**  
This parameter refers to the customers controller.

### Electrical data

DC Link			min	typ	max	units
Voltage		$V_{DC}$		1100	1200	V

Unit 2 AC			min	typ	max	units
Voltage	depending on controller	$V_{Unit2}$		690		$V_{RMS}$
Continuous current	$V_{Unit2} = 690V_{RMS}$ , $V_{DC} = 1100V$ , $T_{inlet} = 40^{\circ}C$ , $T_J \leq 125^{\circ}C$ , $f_{Unit2} = 50Hz$ , $f_{sw2} = 2000Hz$ , $\cos(\phi) = 0,85$	$I_{Unit2}$			176	$A_{RMS}$
Continuous current overload cap.	$T_{inlet} = 40^{\circ}C$ , for overload capability 150% for 60s			124		$A_{RMS}$
Short time current	$T_{inlet} = 40^{\circ}C$ , 10s, every 180s, initial load = 153 $A_{RMS}$	$I_{Unit2}$			191	$A_{RMS}$
DC current	no rotating field, $T_{inlet} = 40^{\circ}C$	$I_{Unit2 DC}$			85,0	$A_{av}$
Overcurrent shutdown	within 15 $\mu s$			460		$A_{peak}$
Switching frequency		$f_{sw2}$			20000	Hz
Power losses	$V_{Unit2} = 690V$ , $V_{DC} = 1100V$ , $T_{inlet} = 40^{\circ}C$ , $T_J \leq 125^{\circ}C$ , $f_{Unit2} = 50Hz$ , $f_{sw2} = 2000Hz$ , $\cos(\phi) = 0,85$ , $I_{Unit2} = 176A_{RMS}$	$P_{loss2}$		2030		W
Power factor		$\cos(\phi)_{Unit2}$	-1,00		1,00	

General data			min	typ	max	units
Power losses (PCB)		$P_{loss aux}$			t.b.d.	W
EMC test	according to IEC61800-3 at named interfaces	power	$V_{Burst}$	2		kV
		control	$V_{Burst}$	1		kV
		aux (24V)	$V_{Surge}$	1		kV
Insulation management is designed for		$V_{Line}$		690		$V_{RMS}$
Insulation test voltage	according to EN50178, f = 50Hz, t = 60s	$V_{isol}$		2,5		$kV_{RMS}$

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#### Controller interface data

			min	typ	max	units
Auxiliary voltage		$V_{aux}$	18	24	30	$V_{av}$
Auxiliary power requirement	$V_{aux} = 24V_{av}$	$P_{aux}$	40			W
Driver and interface board	see separate technical information		DR210			
Driver core			EiceDRIVER 2ED300C17-S			
Digital input level	resistor to GND 10,0k $\Omega$ , capacitor to GND 1nF, high = on, min 15mA	$V_{in}$	0,0		15,0	V
Digital output level	open collector, low = ok, max 15mA	$V_{out}$	0,0		30,0	V
Analog current outputs Unit 2	load max 1mA; at 176A	$V_{ana\ out}$	3,77	3,85	3,93	V
Analog temperature output	load max 1mA; at $T_{NTC} = 80^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T\ out}$	9,57	9,77	9,97	V
Overvoltage shutdown reaction time	after overvoltage message by PrimeSTACK interface				50	$\mu s$
Overcurrent shutdown reaction time	after overvoltage message by PrimeSTACK interface				10	$\mu s$

#### Heat sink air cooled / Thermal data

			min	typ	max	units
Airflow	$T_{Air} = 20^{\circ}C$ , $P_{air} = 1013hPa$ , dry- and dust free, measured on side of heat sink. according to DIN 41882	$\Delta V/\Delta t_{Air}$	500			$m^3/h$
Air pressure drop		$\Delta p_{Air}$		400		Pa
Cooling air inlet temperature	heat sink temperature $> -25^{\circ}C$	$T_{inlet}$	-25		40	$^{\circ}C$

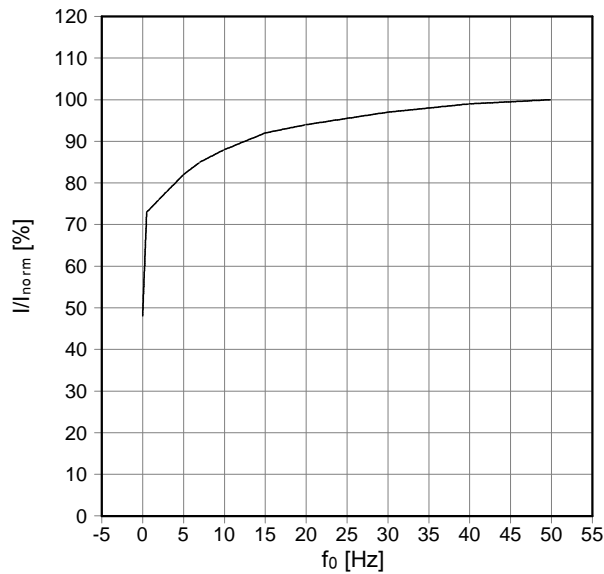
#### Environmental conditions

			min	typ	max	units
Storage temperature		$T_{stor}$	-40		85	$^{\circ}C$
Ambient temperature (PCB)		$T_{amp}$	-25		55	$^{\circ}C$
Operating temperature	see chapter Heat sink air cooled / Thermal data					
Cooling air velocity (PCB)		$V_{Air\ PCB}$	0,3			m/s
Air pressure	standard atmosphere	$p_{Air}$	900		1100	Pa
Humidity	no condensation	Rel. F	5		85	%
Installation height			0		1000	m
Vibration	according to IEC60721				5	$m/s^2$
Shock	according to IEC60721				40	$m/s^2$
Protection degree			IP00			
Pollution degree			2			
Torque at DC Terminals		$M_{DC}$	6,0		10,0	Nm
Torque at AC Terminals		$M_{AC}$	16,0		20,0	Nm
Dimensions	width $\times$ depth $\times$ height		216	280	165	mm
Weight with heat sink	approximation			8,9		kg
Weight without heat sink	approximation			2,9		kg

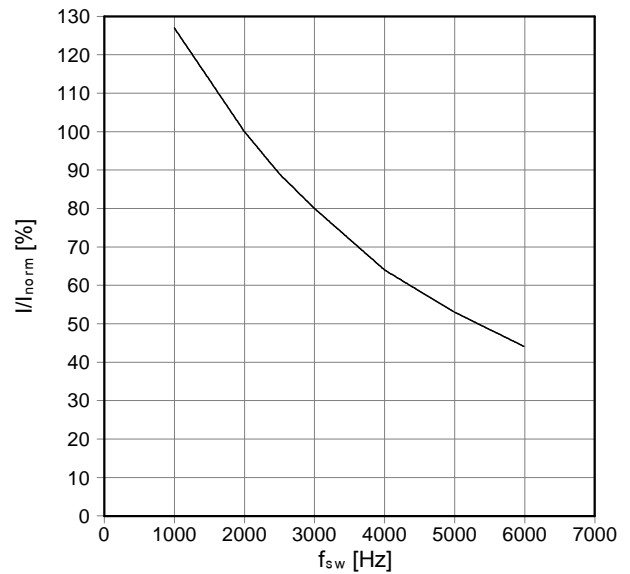
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Zieldaten  
target data

fo - derating curve IGBT (motor)  
cos(phi) = 0,85  
T<sub>cool medium</sub> = 40°C

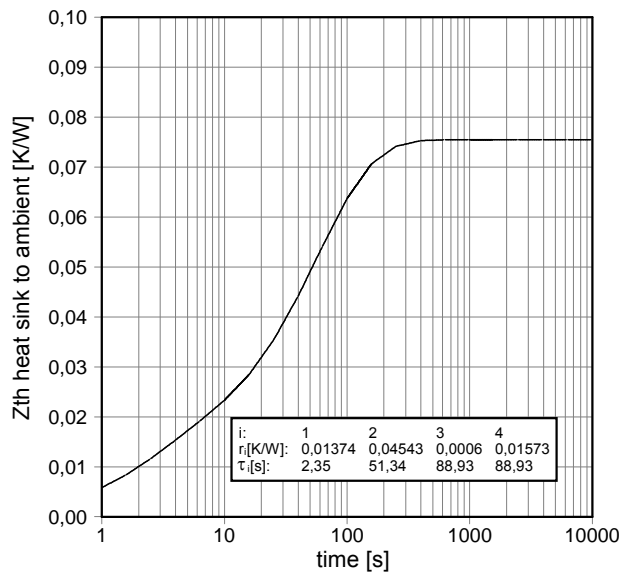


fsw - derating curve IGBT (motor)  
cos(phi) = 0,85  
T<sub>cool medium</sub> = 40°C



Transient thermal impedance per module

T<sub>cool medium</sub> = 40°C

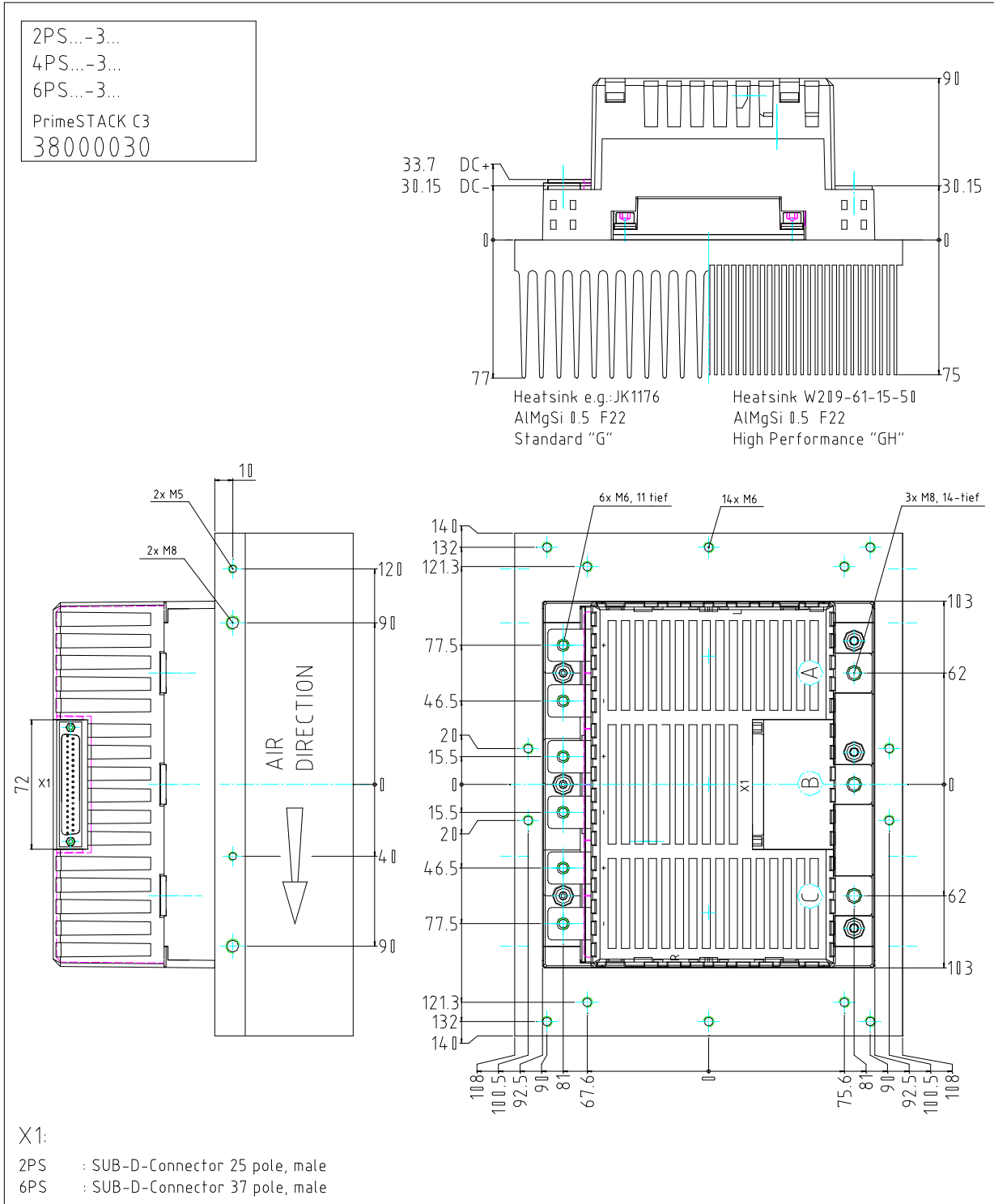


i:	1	2	3	4
r <sub>i</sub> [K/W]:	0,01374	0,04543	0,0006	0,01573
τ <sub>i</sub> [s]:	2,35	51,34	88,93	88,93

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Zieldaten  
target data

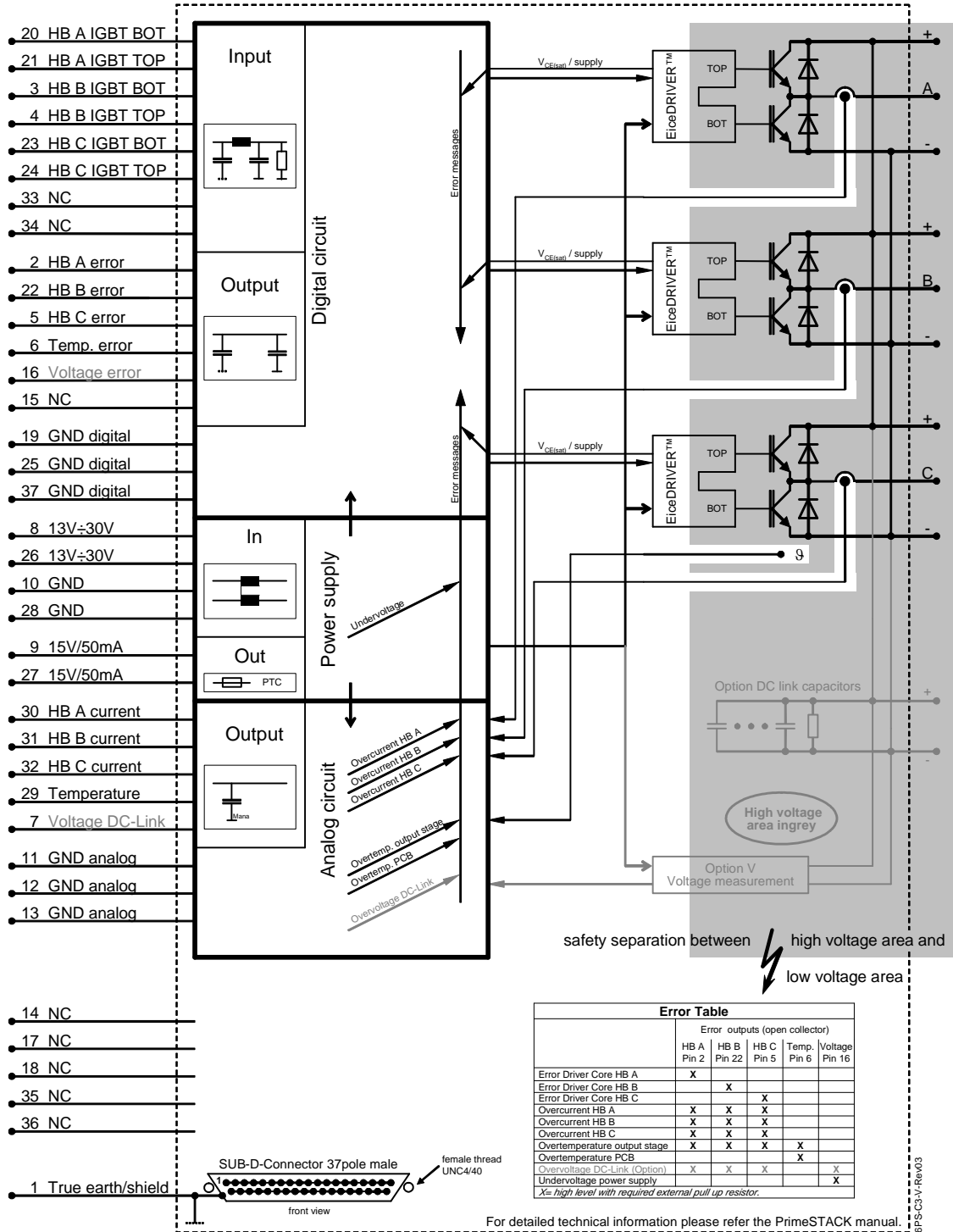
Mechanical drawing



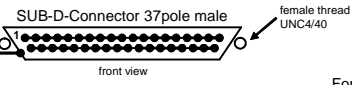
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**Zieldaten**  
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**Circuit diagram**



- 14 NC
- 17 NC
- 18 NC
- 35 NC
- 36 NC



	Error outputs (open collector)				
	HB A Pin 2	HB B Pin 22	HB C Pin 5	Temp. Pin 6	Voltage Pin 16
Error Driver Core HB A	X				
Error Driver Core HB B		X			
Error Driver Core HB C			X		
Overcurrent HB A	X	X	X		
Overcurrent HB B	X	X	X		
Overcurrent HB C	X	X	X		
Overtemperature output stage	X	X	X	X	
Overtemperature PCB				X	
Undervoltage DC-Link (Option)	X	X	X		X
Undervoltage power supply					X

*X: high level with required external pull up resistor.*

For detailed technical information please refer the PrimeSTACK manual.

6PES3-V-Rev03

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**Ziel Daten**  
**target data**

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**Sicherheitshinweise**

Bevor Sie mit der Installation und dem Betrieb der Baugruppe beginnen, lesen Sie bitte sorgfältig alle Sicherheitshinweise, Warnungen und beachten Sie die angebrachten Warnschilder. Vergewissern Sie sich, dass alle Warnschilder in leserlichem Zustand verbleiben und fehlende oder beschädigte Schilder ersetzt werden.

**Safety Instructions**

Prior to installation and operation, all safety notices and warnings and all warning signs attached to the equipment have to be carefully read. Make sure that all warning signs remain in a legible condition and that missing or damaged signs are replaced. To installation and operation, all safety notices and warnings and all warning signs attached to the equipment have to be carefully read. Make sure that all warning signs remain in a legible condition and that missing or damaged signs are replaced.

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