

Technical Information

PrimeSTACK

4PS0200R06KE3-3GV



Vorläufige Daten
preliminary data

Key data

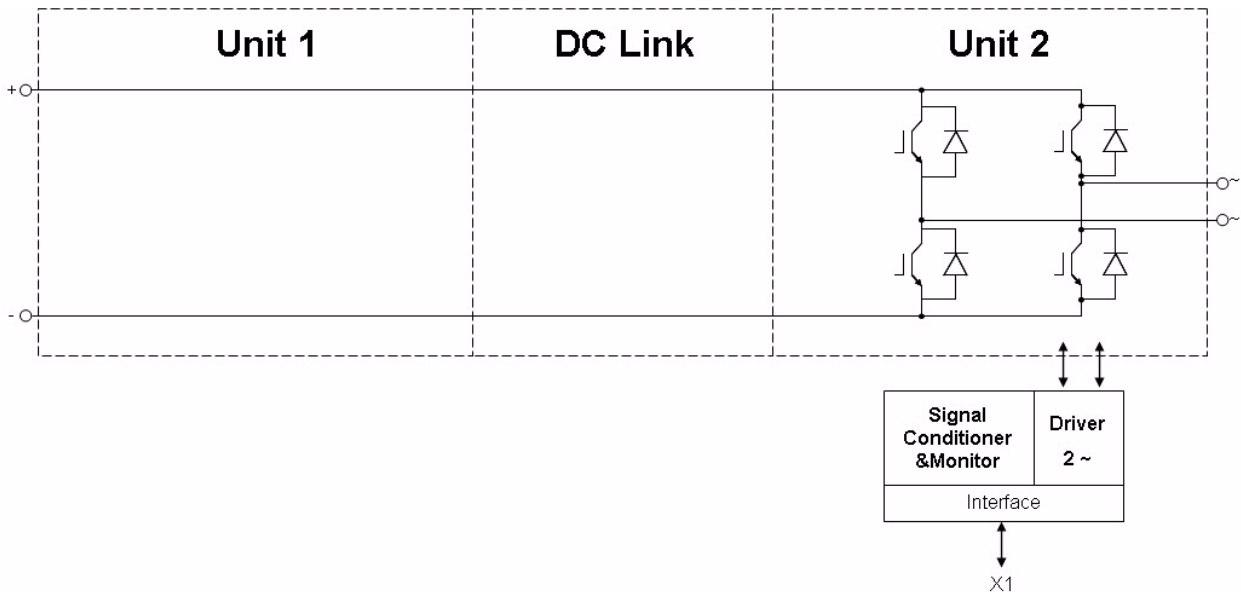
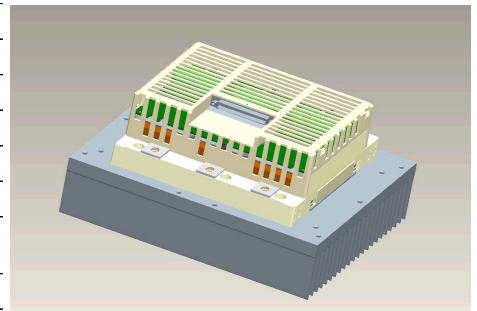
2x 208A AC at 230V AC, forced air (fan not implemented)

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	B2I
Application / Modulation	Inverter / Sine
Load type	resistive, inductive
Cooling	forced air (fan not implemented)
Market	common industrial, drives, power supply
Monitors	current, voltage, temperature
Semicond. (Unit 1)	none
DC Link	none
Semicond. (Unit 2)	IGBT 2x FF200R06KE3
Interface IGBT	electrical CMOS
Standards	EN50178, UL94, prepared for UL508C
Product ID (eupec)	31632
Mechanical drawing number	38000030
Electrical drawing number	4PS-C3-V



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Notes

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

Electrical data

DC Link			min	typ	max	units
Voltage		V_{DC}		370	400	V
Overvoltage shutdown	within 5000 μ s			390		V

Unit 2 AC			min	typ	max	units
Voltage	depending on controller	V_{Unit2}		230		V_{RMS}
Continuous current	$V_{Unit2} = 230V_{RMS}$, $V_{DC} = 370V$, $T_{inlet} = 40^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 50Hz$, $f_{sw2} = 5000Hz$, $\cos(\phi) = 0,85$	I_{Unit2}			208	A_{RMS}
Continuous current overload cap.	$T_{inlet} = 40^{\circ}C$, for overload capability 150% for 60s			145		A_{RMS}
Short time current	$T_{inlet} = 40^{\circ}C$, 10s, every 180s, initial load = 176 A_{RMS}	I_{Unit2}			220	A_{RMS}
DC current	no rotating field, $T_{inlet} = 40^{\circ}C$	$I_{Unit2 DC}$			116,0	A_{av}
Overcurrent shutdown	within 15 μ s			460		A_{peak}
Switching frequency		f_{sw2}			20000	Hz
Power losses	$V_{Unit2} = 230V$, $V_{DC} = 370V$, $T_{inlet} = 40^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 50Hz$, $f_{sw2} = 5000Hz$, $\cos(\phi) = 0,85$, $I_{Unit2} = 208A_{RMS}$	P_{loss2}		880		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}		230		V_{RMS}
Insulation test voltage	according to EN50178, f = 50Hz, t = 60s	V_{isol}		1,8		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 Ω , 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 208A	$V_{ana\ out}$	4,48	4,57	4,66	V
Analog DC Link voltage output	load max 1mA; at 385V	$V_{DC\ out}$	8,50	8,67	8,84	V
Analog temperature output	load max 1mA; at $T_{NTC} = 60^{\circ}C$ correspond to $T_j = 140^{\circ}C$	$V_{T\ out}$	5,39	5,50	5,61	V
Overtemperature shutdown	at $T_{NTC} = 65^{\circ}C$ correspond to $T_j = 140^{\circ}C$	$V_{T\ out\ OT}$		6,5		V
Overvoltage shutdown reaction time	after overvoltage message by PrimeSTACK interface				50	μs
Overcurrent shutdown reaction time	after overvoltage message by PrimeSTACK interface				10	μs

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		Δp_{Air}		150		Pa
Cooling air inlet temperature	heat sink temperature $> -25^{\circ}C$	T_{inlet}	-25		40	$^{\circ}C$

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IGBT data unit 2

Type	assumed		min	typ	max	units
collector-emitter saturation voltage	$I_c = 200A; V_{ge} = 15V$	$V_{CE\ sat}$		1,6		V
parameter for linear model	$T_{vj} = 25^\circ C$	V_{ce1}		0,9		V
parameter for linear model	$T_{vj} = 25^\circ C$	r_{ce1}		1,75		mΩ
parameter for linear model	$T_{vj} = 125^\circ C$	V_{ce2}		0,775		V
parameter for linear model	$T_{vj} = 125^\circ C$	r_{ce2}		4,125		mΩ
turn-on / turn-off energy loss per pulse	$T_{vj} = 125^\circ C$	E_2		2,9 / 7,9		mJ
thermal resistance, junction to case	per IGBT	R_{thjc}		0,22		K/W
thermal resistance, case to heatsink	per IGBT	R_{thch}		0,03		K/W

Diode data unit 2

Type	assumed		min	typ	max	units
forward voltage	$I_F = 200A; V_{ge} = 0V$	V_F		1,5		V
parameter for linear model	$T_{vj} = 25^\circ C$	V_{F1}		1,05		V
parameter for linear model	$T_{vj} = 25^\circ C$	r_{F1}		2,5		mΩ
parameter for linear model	$T_{vj} = 125^\circ C$	V_{F2}		0,9		V
parameter for linear model	$T_{vj} = 125^\circ C$	r_{F2}		3		mΩ
reverse recovery energy	$T_{vj} = 25^\circ C$	E_{rec1}		2,3		mJ
reverse recovery energy	$T_{vj} = 125^\circ C$	E_{rec2}		4,1		mJ
thermal resistance, junction to case	per Diode	R_{thjc}		0,42		K/W
thermal resistance, case to heatsink	per Diode	R_{thch}		0,06		K/W

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Environmental conditions

			min	typ	max	units
Storage temperature		T_{stor}	-40		85	°C
Ambient temperature (PCB)		T_{amp}	-25		55	°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	hPa
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 × depth × height		216	280	167	mm
Weight with heat sink	approximation			9,1		kg
Weight without heat sink	approximation			2,9		kg

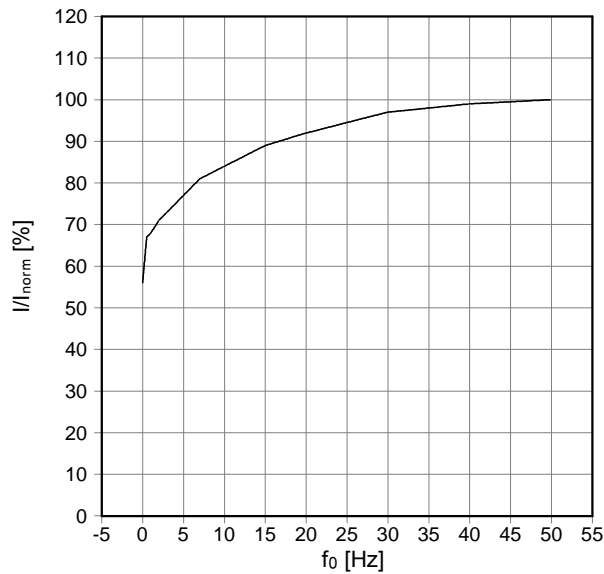
Matching Code

110-10000-1122-0270-0120-400-000-000-00-050331

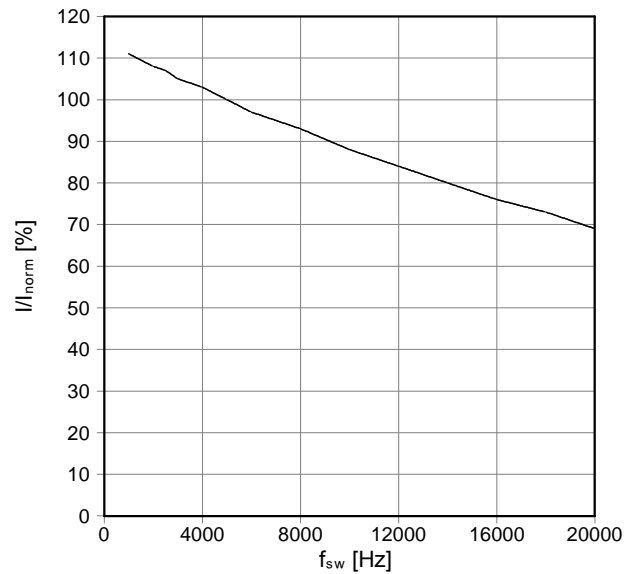
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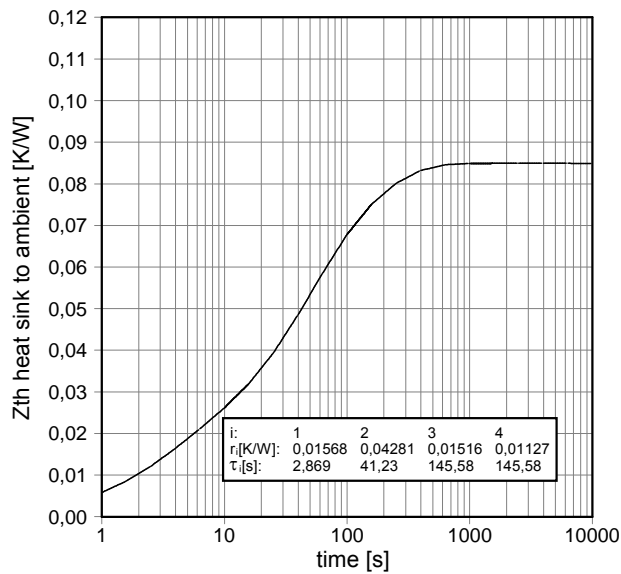
fo - derating curve IGBT (motor)
cos(phi) = 0,85
T_{cool medium} = 40°C



fsw - derating curve IGBT (motor)
cos(phi) = 0.85
T_{cool medium} = 40



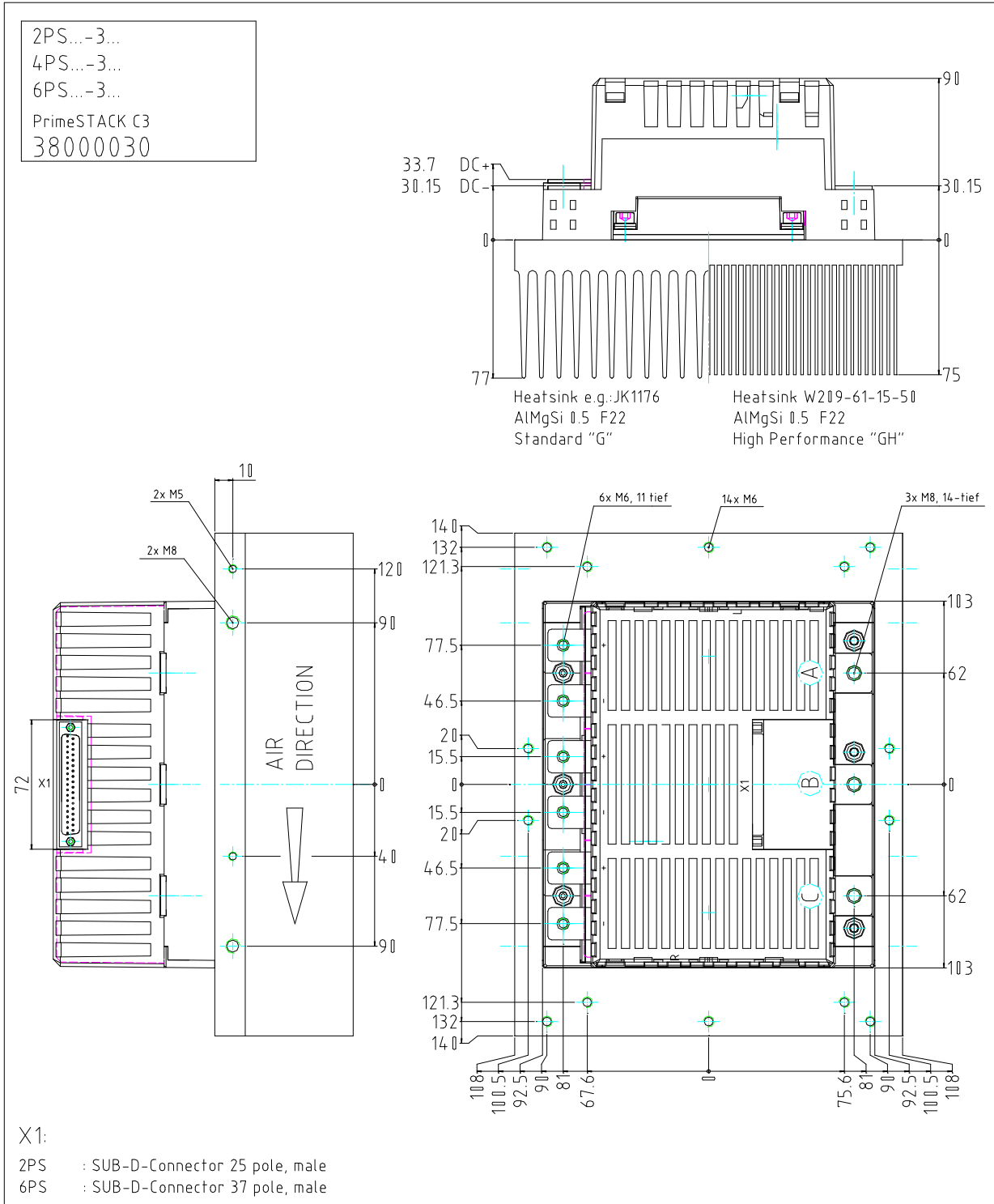
Transient thermal impedance per module
T_{cool medium} = 40°C



i:	1	2	3	4
r _i [K/W]:	0,01568	0,04281	0,01516	0,01127
τ _i [s]:	2,869	41,23	145,58	145,58

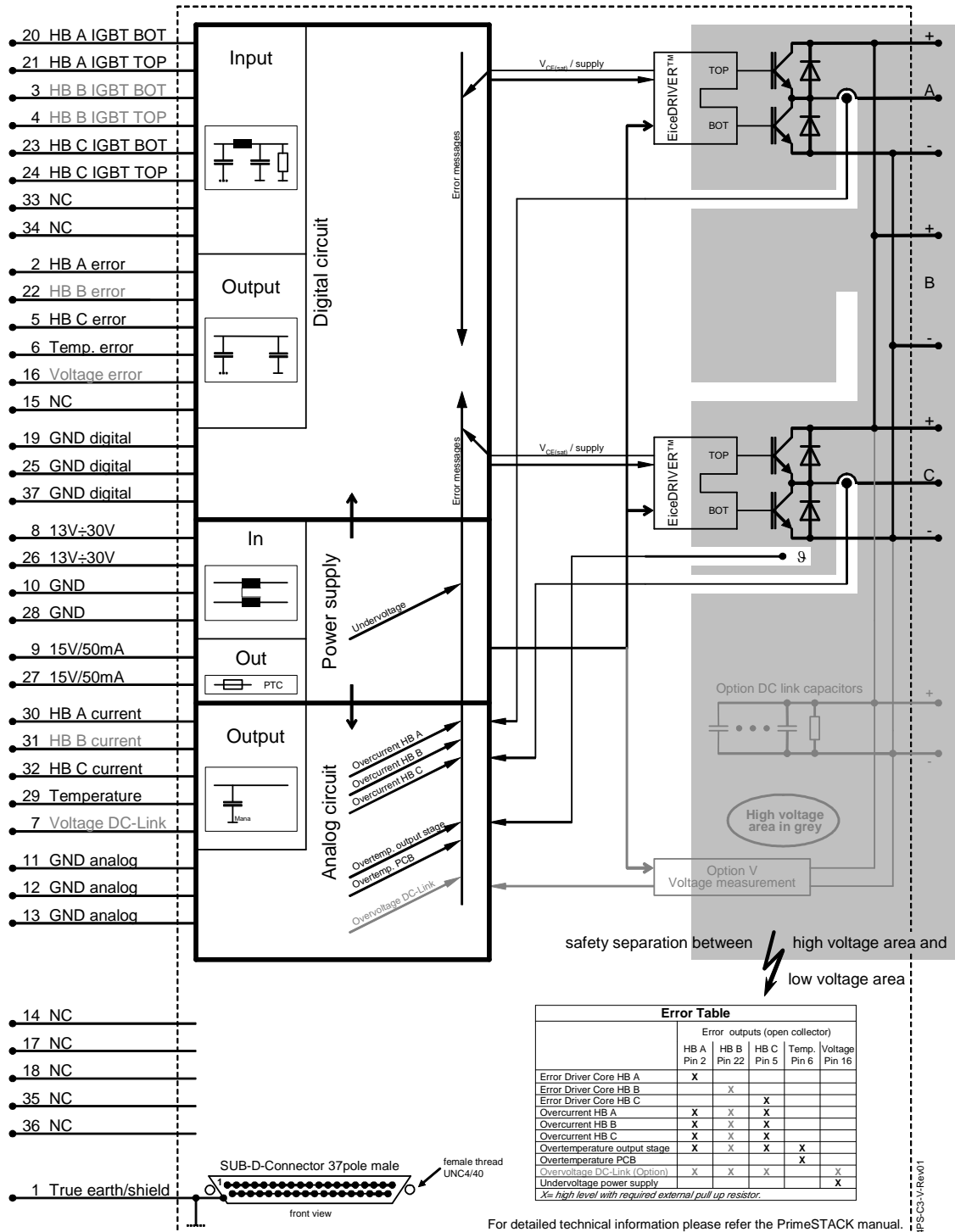
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Mechanical drawing



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Circuit diagram



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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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