

Vorläufige Daten
preliminary data

Key data

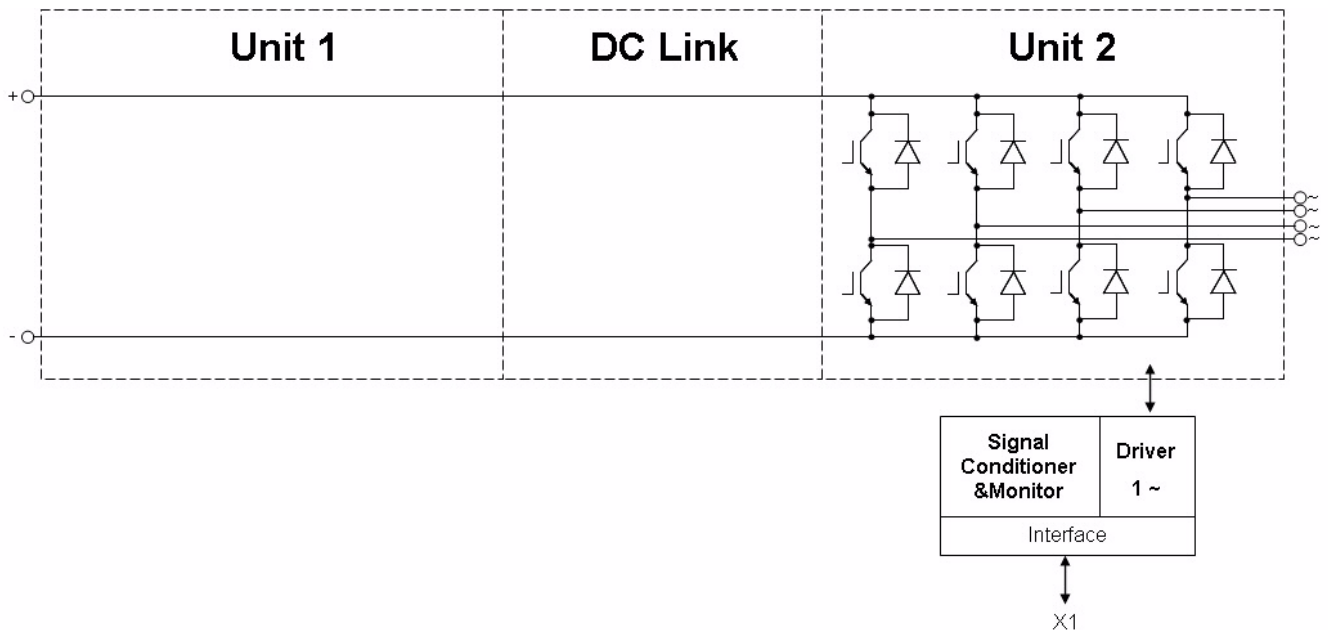
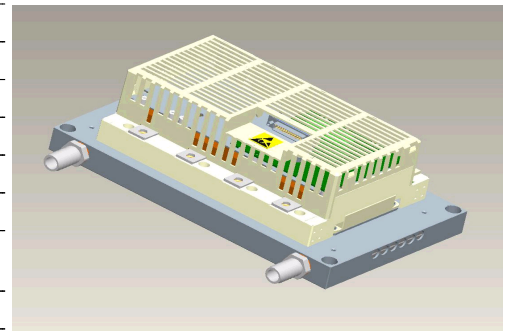
1x 1070A AC at 690V AC, water cooled

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	1/2 B2I	
Application / Modulation	Inverter / Sine	
Load type	resistive, inductive	
Cooling	water cooled	
Market	common industrial, drives, power supply	
Monitors	current, voltage, temperature	
Semicond. (Unit 1)	none	
DC Link	none	
Semicond. (Unit 2)	IGBT	4x FF300R17KE3
Interface IGBT	electrical CMOS	
Standards	EN50178, UL94, prepared for UL508C	
Product ID (eupec)	32132	
Mechanical drawing number	38000088	
Electrical drawing number	2PS-C4-V	



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Notes

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

Heat sink with aluminum cooling channel.
Composites of fluid: Water and 52 vol. % Antifrogen N

Electrical data

DC Link			min	typ	max	units
Voltage		V_{DC}		1100	1200	V
Overvoltage shutdown	within 5000 μ s			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}			1070	A_{RMS}
Continuous current overload cap.	$T_{inlet} = 40^{\circ}C$, for overload capability 150% for 60s			716		A_{RMS}
Short time current	$T_{inlet} = 40^{\circ}C$, 10s, every 180s, initial load = 865 A_{RMS}	I_{Unit2}			1081	A_{RMS}
DC current	no rotating field, $T_{inlet} = 40^{\circ}C$	$I_{Unit2 DC}$			525,0	A_{av}
Overcurrent shutdown	within 15 μ s			2500		A_{peak}
Switching frequency		f_{sw2}			6000	Hz
Power losses	$V_{Unit2} = 690V$, $V_{DC} = 1100V$, $T_{inlet} = 40^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 50Hz$, $f_{sw2} = 2000Hz$, $\cos(\phi) = 0,85$, $I_{Unit2} = 1070A_{RMS}$	P_{loss2}		4510		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}	13	24	30	V_{av}
Auxiliary power requirement	$V_{aux} = 24V_{av}$	P_{aux}	40			W
Driver and interface board	see separate technical information		DR240			
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 1070A	$V_{ana\ out}$	4,30	4,39	4,48	V
Analog DC Link voltage output	load max 1mA; at 1100V	$V_{DC\ out}$	8,07	8,23	8,39	V
Analog temperature output	load max 1mA; at $T_{NTC} = 67^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T\ out}$	6,78	6,92	7,06	V
Overtemperature shutdown	at $T_{NTC} = 67^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T\ out\ OT}$		6,92		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 water cooled / Thermal data

			min	typ	max	units
Water flow	according cooling water specification from eupec	$\Delta V/\Delta t_{Water}$	10			dm ³ /min
Water pressure drop		Δp_{Water}		250		mbar
Water pressure					8	bar
Cooling water inlet temperature		T_{inlet}	-25		40	$^{\circ}C$
Water connection				3/4		in

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IGBT data unit 2

Type	assumed		min	typ	max	units
collector-emitter saturation voltage	$I_c = 300A; V_{ge} = 15V; T_{vj} = 125^\circ C$	$V_{CE\ sat}$		2,4		V
parameter for linear model	$T_{vj} = 25^\circ C$	V_{ce1}		1,025		V
parameter for linear model	$T_{vj} = 25^\circ C$	r_{ce1}		3,25		mΩ
parameter for linear model	$T_{vj} = 125^\circ C$	V_{ce2}		0,975		V
parameter for linear model	$T_{vj} = 125^\circ C$	r_{ce2}		4,75		mΩ
turn-on / turn-off energy loss per pulse	$T_{vj} = 25^\circ C$	E_1		71 / 64		mJ
turn-on / turn-off energy loss per pulse	$T_{vj} = 125^\circ C$	E_2		105 / 94		mJ
thermal resistance, junction to case	per IGBT	R_{thjc}		0,085		K/W
thermal resistance, case to heatsink	per IGBT	R_{thch}		0,033		K/W

Diode data unit 2

Type	assumed		min	typ	max	units
forward voltage	$I_F = 300A; V_{ge} = 0V; T_{vj} = 125^\circ C$	V_F		1,9		V
parameter for linear model	$T_{vj} = 25^\circ C$	V_{F1}		1,035		V
parameter for linear model	$T_{vj} = 25^\circ C$	r_{F1}		2,55		mΩ
parameter for linear model	$T_{vj} = 125^\circ C$	V_{F2}		0,925		V
parameter for linear model	$T_{vj} = 125^\circ C$	r_{F2}		3,25		mΩ
reverse recovery energy	$T_{vj} = 25^\circ C$	E_{rec1}		40		mJ
reverse recovery energy	$T_{vj} = 125^\circ C$	E_{rec2}		72		mJ
thermal resistance, junction to case	per Diode	R_{thjc}		0,13		K/W
thermal resistance, case to heatsink	per Diode	R_{thch}		0,051		K/W

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Environmental conditions

			min	typ	max	units
Storage temperature		T_{stor}	-40		85	°C
Ambient temperature		T_{amp}	-25		55	°C
Operating temperature	see chapter Heat sink water cooled / Thermal data					
Cooling air velocity (PCB)		$V_{Air PCB}$	2,0			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		260	360	120	mm
Weight with heat sink	approximation			9,4		kg
Weight without heat sink	approximation			3,8		kg

Matching Code

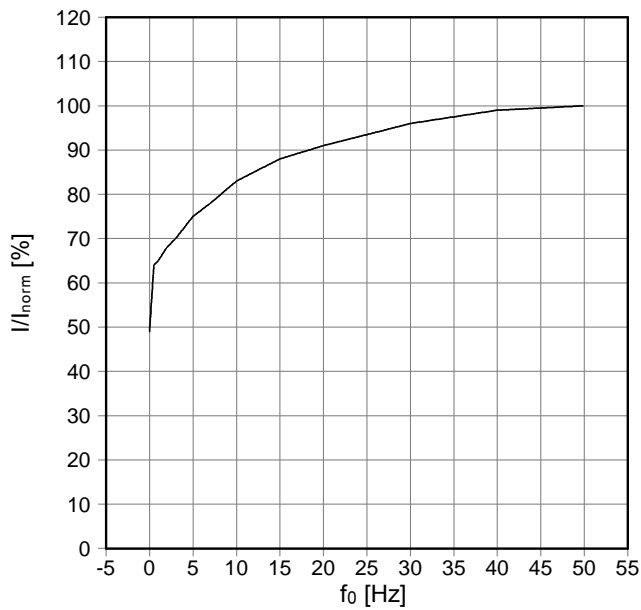
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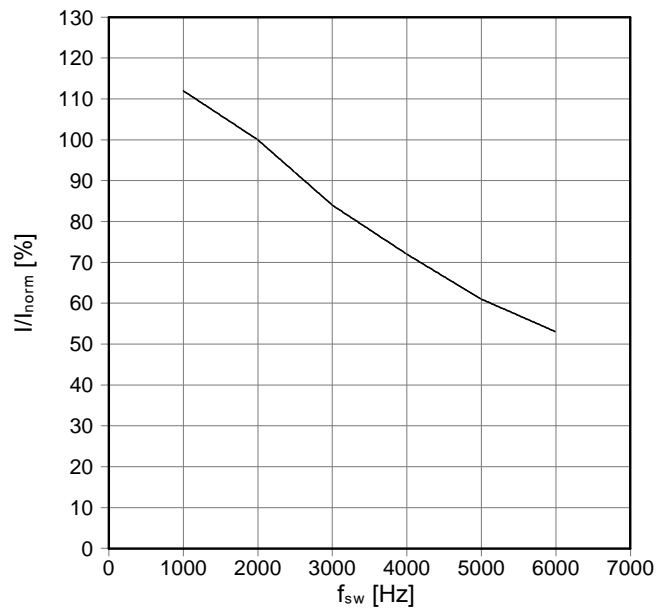


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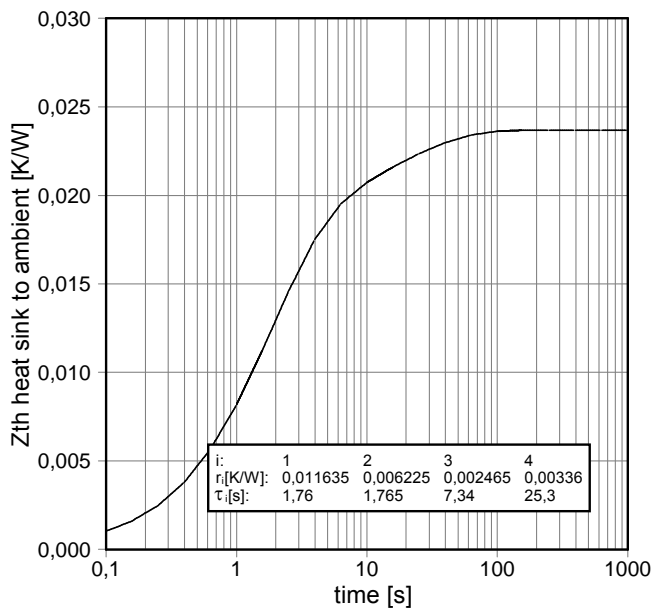
fo - derating curve IGBT (motor)
cos(phi) = 0,85
T_{cool medium} = 40°C



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



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



i:	1	2	3	4
r _i [K/W]:	0,011635	0,006225	0,002465	0,00336
τ _i [s]:	1,76	1,765	7,34	25,3

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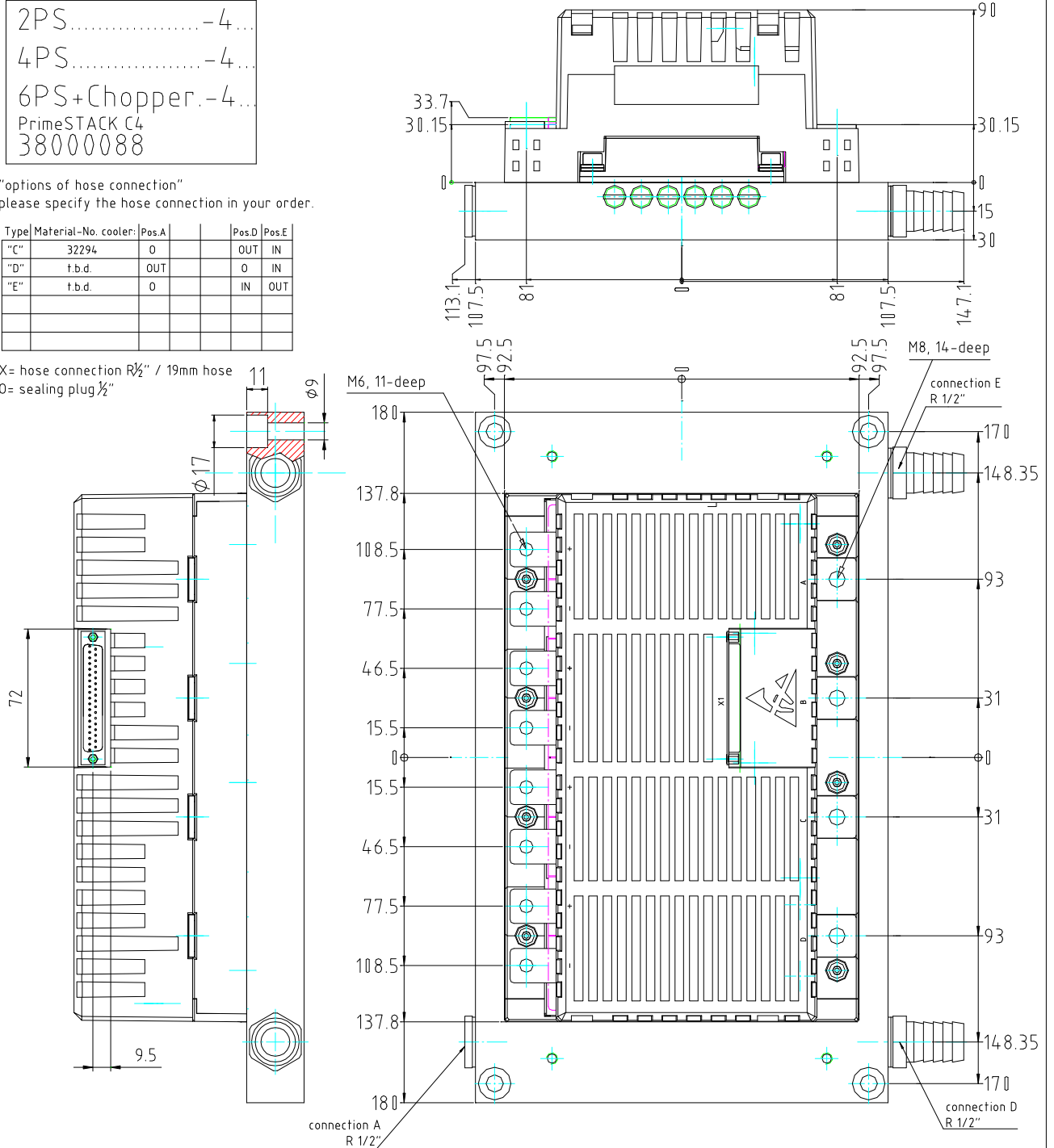
Mechanical drawing

2PS.....	-4
4PS.....	-4
6PS+Chopper.....	-4
PrimeSTACK C4	
38000088	

"options of hose connection"
please specify the hose connection in your order.

Type	Material-No.	cooler	Pos.A		Pos.D	Pos.E
"C"	32294		0		OUT	IN
"D"	t.b.d.		OUT		0	IN
"E"	t.b.d.		0		IN	OUT

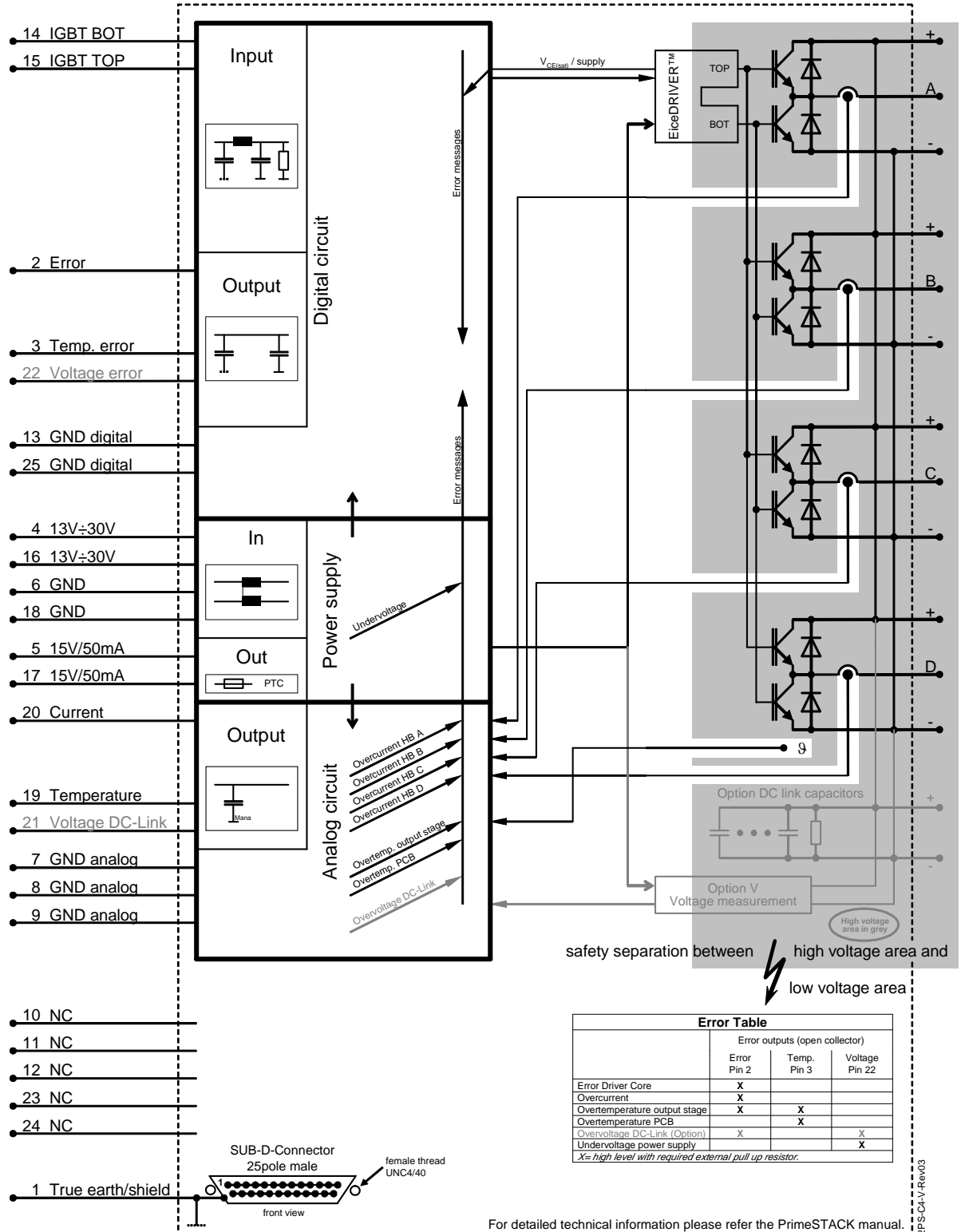
X= hose connection R $\frac{1}{2}$ " / 19mm hose
O= sealing plug $\frac{1}{2}$ "



- X1:
- 2PS : SUB-D-Connector 25 pole, male
 - 4PS : SUB-D-Connector 37 pole, male
 - 6PS+Chopper : SUB-D-Connector 37 pole, male

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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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