

Vorläufige Daten
preliminary data

Key data

3x 300A rms at 500V rms, water cooled

General information

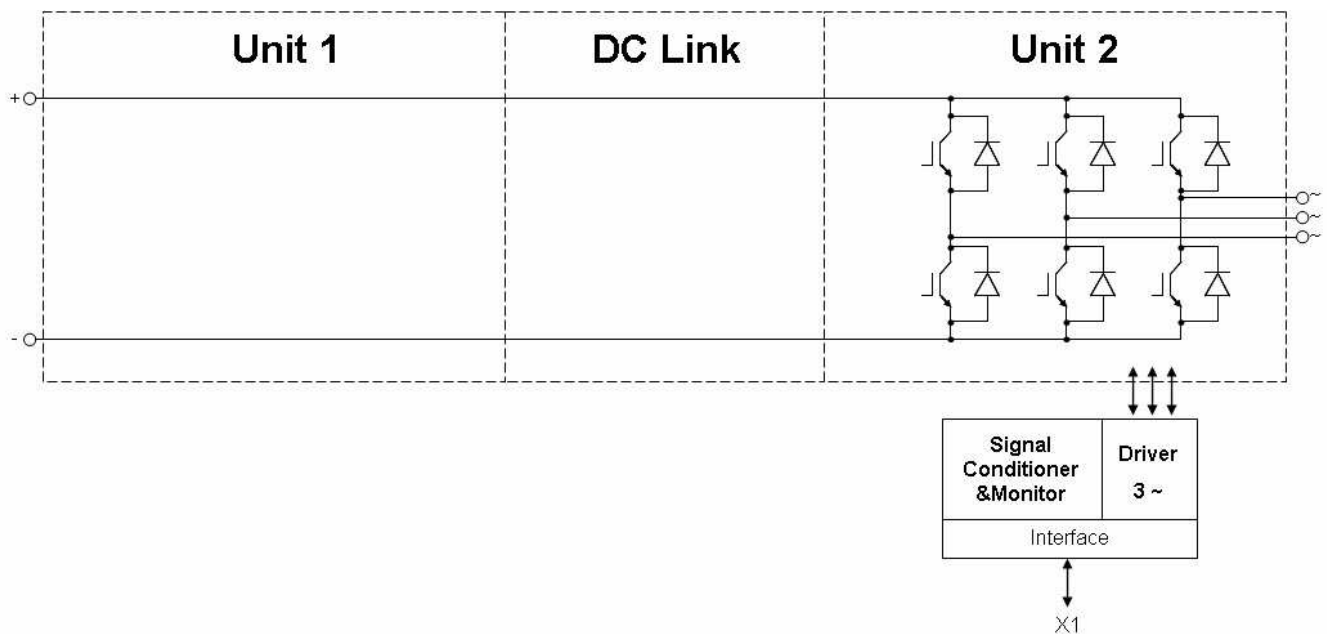
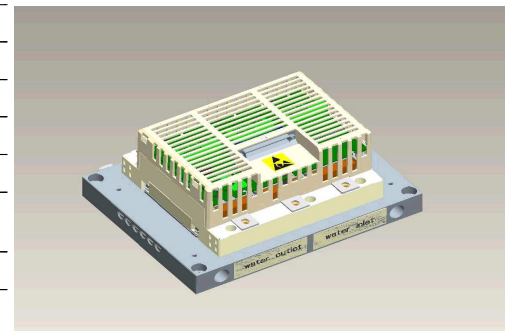
Stacks for various inverter application. Semiconductors, heat sinks, drivers and sensors included.

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	water cooled
Implemented sensors	current, voltage, temperature
Semicond. (Unit 1)	none
DC Link	none
Semicond. (Unit 2)	IGBT 3x FF450R12KE4
Driver signals IGBT	electrical CMOS 0 .. 15V
Standards	EN50178, UL94, prepared for UL508C
Sales - name	6PS04512E43W34482
Internal ID	34482
Mechanical drawing number	34482_MB
Electrical drawing number	6PS-C3-V-Rev03



prepared by: Hoelbe Oliver	date of publication: 2010-12-16
approved by: Sören Dreifke	revision: 2.2

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Notes

Heat sink with aluminum cooling channel.
Composites of fluid: Water and 52 vol. % Antifrogen N.
Integrated current sensor: permanent current 300 A rms.

Electrical data

DC Link			min	typ	max	units
Voltage		V_{DC}		650	850	V
Overvoltage shutdown	within 5000µs			900		V

Unit 2 AC			min	typ	max	units
Voltage	depending on controller	V_{Unit2}		500		V_{RMS}
Continuous current	$V_{Unit2} = 500V_{RMS}$, $V_{DC} = 800V$, $T_{inlet} = 40^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 5Hz$, $f_{sw2} = 2500Hz$, $\cos(\phi) = 0,85$	I_{Unit2}			300	A_{RMS}
Continuous current overload cap.	$T_{inlet} = 40^{\circ}C$, for overload capability 150% for 60s			221		A_{RMS}
DC current	no rotating field, $T_{inlet} = 40^{\circ}C$	$I_{Unit2 DC}$			223,0	A_{av}
Overcurrent shutdown	within 15µs			625		A_{peak}
Switching frequency		f_{sw2}			14000	Hz
Power losses	$V_{Unit2} = 500V$, $V_{DC} = 800V$, $T_{inlet} = 40^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 5Hz$, $f_{sw2} = 2500Hz$, $\cos(\phi) = 0,85$, $I_{Unit2} = 300A_{RMS}$	P_{loss2}		2400		W
Power factor		$\cos(\phi)_{Unit2}$	-1,00		1,00	

General data			min	typ	max	units
Power losses (PCB)		$P_{loss aux}$			40	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}		500		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		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 300A	$V_{ana\ out}$	4,82	4,92	5,02	V
Analog DC Link voltage output	load max 1mA; at 850V	$V_{DC\ out}$	8,33	8,50	8,67	V
Analog temperature output	load max 1mA; at $T_{NTC} = 57^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T\ out}$	9,47	9,66	9,85	V
Overtemperature shutdown	at $T_{NTC} = 58^{\circ}C$ correspond to $T_j = 128^{\circ}C$	$V_{T\ out\ OT}$		10		V

Heat sink water cooled / Thermal data

			min	typ	max	units
Water flow	according cooling water specification from infineon	$\Delta V/\Delta t_{Water}$	10			dm ³ /min
Water pressure drop		Δp_{Water}		50		mbar
Water pressure					8	bar
Cooling water inlet temperature		T_{inlet}	-40		40	$^{\circ}C$

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IGBT data unit 2

Type	assumed		min	typ	max	units
collector-emitter saturation voltage	$I_c = 450A; V_{ge} = 15V; T_{vj} = 150^\circ C$	$V_{CE sat}$		2,05		V
parameter for linear model	$T_{vj} = 25^\circ C$	V_{ce1}		0,922		V
parameter for linear model	$T_{vj} = 25^\circ C$	r_{ce1}		1,84		mΩ
parameter for linear model	$T_{vj} = 150^\circ C$	V_{ce2}		0,79		V
parameter for linear model	$T_{vj} = 150^\circ C$	r_{ce2}		2,8		mΩ
turn-on / turn-off energy loss per pulse	$T_{vj} = 25^\circ C$	E_1		19 / 33		mJ
turn-on / turn-off energy loss per pulse	$T_{vj} = 150^\circ C$	E_2		36 / 56		mJ
thermal resistance, junction to case	per IGBT	R_{thjc}		0,062		K/W
thermal resistance, case to heatsink	per IGBT	R_{thch}		0,031		K/W

Diode data unit 2

Type	assumed		min	typ	max	units
forward voltage	$I_F = 450A; V_{ge} = 0V; T_{vj} = 150^\circ C$	V_F		1,75		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}		1,444		mΩ
parameter for linear model	$T_{vj} = 150^\circ C$	V_{F2}		0,833		V
parameter for linear model	$T_{vj} = 150^\circ C$	r_{F2}		2,037		mΩ
reverse recovery energy	$T_{vj} = 25^\circ C$	E_{rec1}		19		mJ
reverse recovery energy	$T_{vj} = 150^\circ C$	E_{rec2}		39		mJ
thermal resistance, junction to case	per Diode	R_{thjc}		0,11		K/W
thermal resistance, case to heatsink	per Diode	R_{thch}		0,055		K/W

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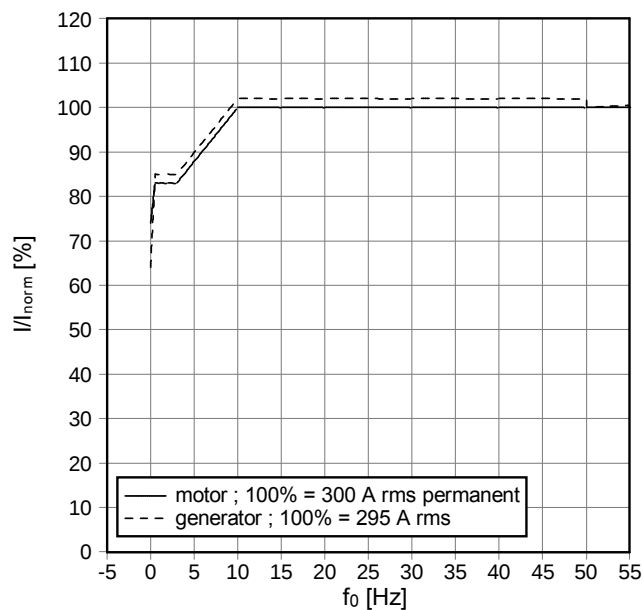
Environmental conditions

			min	typ	max	units
Storage temperature		T_{stor}	-40		85	°C
Ambient temperature		T_{amb}	-25		55	°C
Operating temperature	see chapter Heat sink water cooled / Thermal data					
Cooling air velocity (PCB)		$V_{Air PCB}$	0,3			m/s
Air pressure	standard atmosphere	p_{Air}			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		215	280	120	mm
Weight with heat sink	approximation			7,7		kg
Weight without heat sink	approximation			2,9		kg

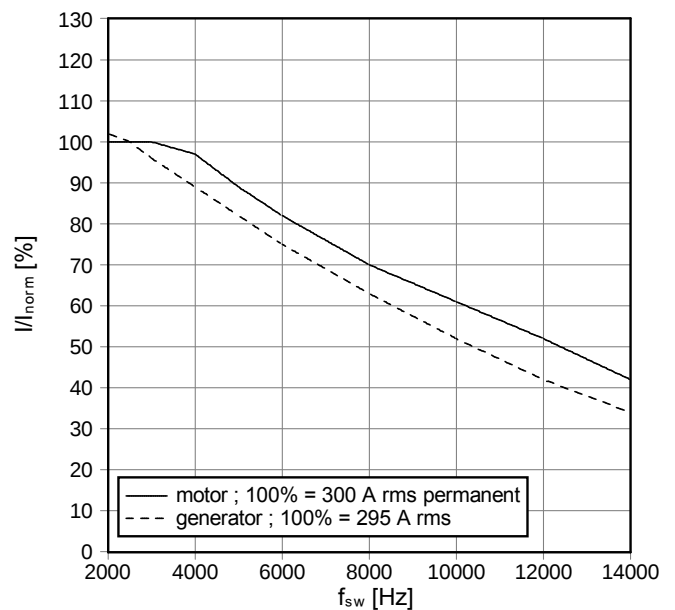
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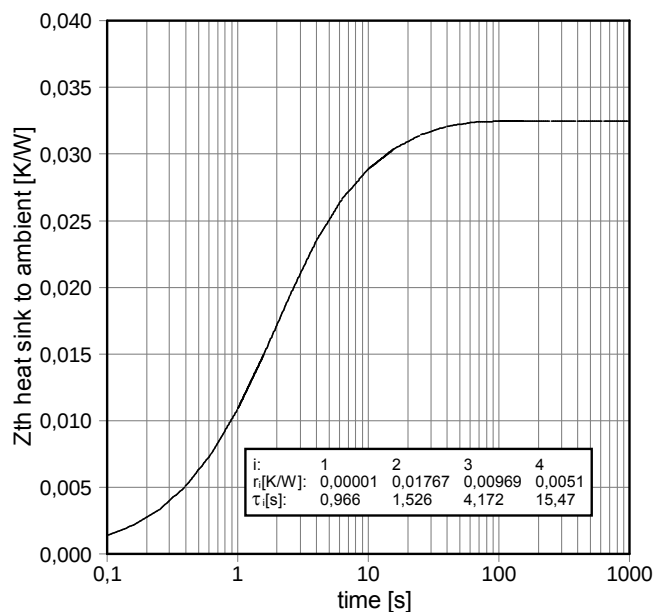
f_o - derating curve IGBT (motor), Diode (generator)
 $\cos(\phi) = \pm 0,85$
 $T_{cool\ medium} = 40^{\circ}C$



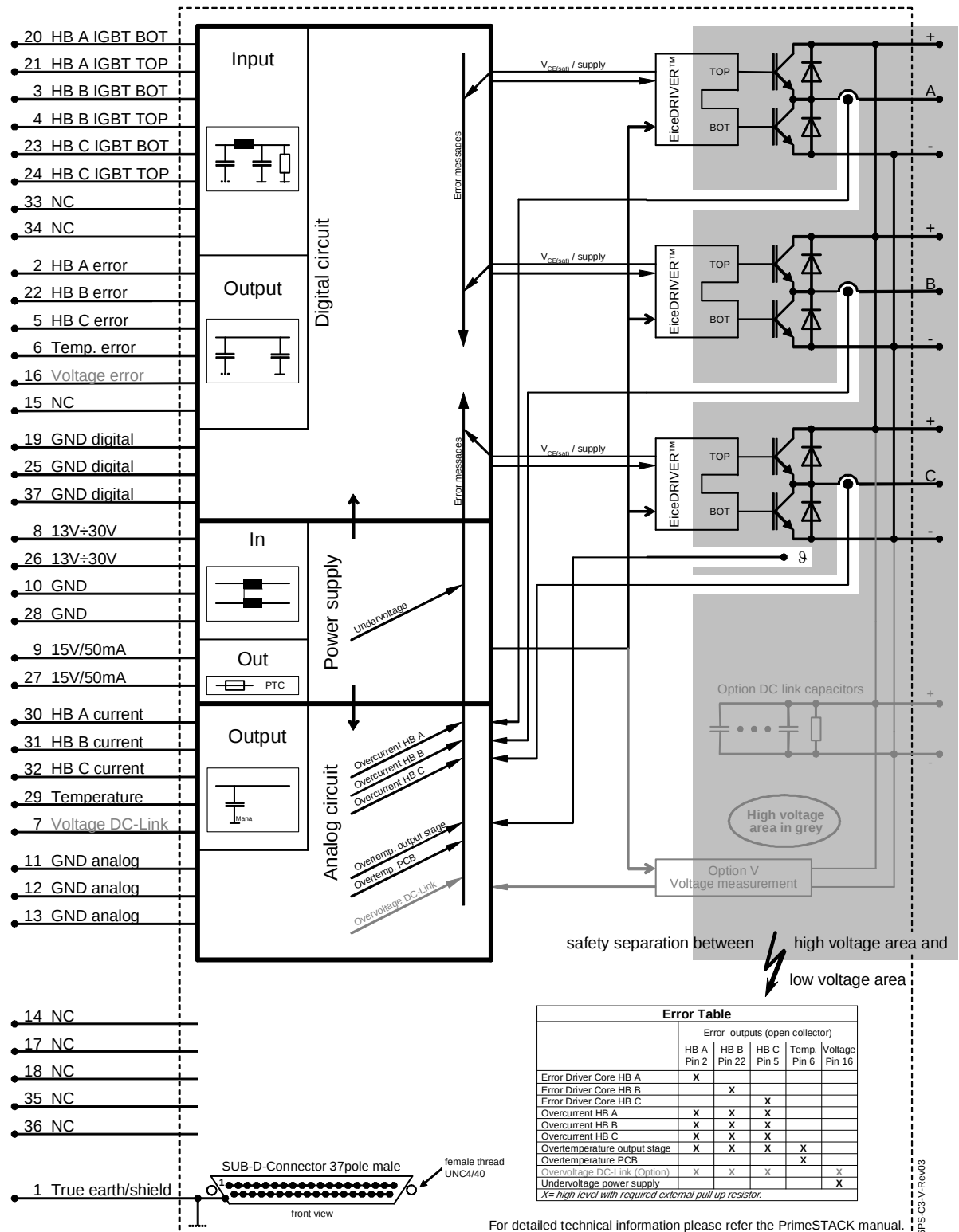
f_{sw} - derating curve IGBT (motor), Diode (generator)
 $\cos(\phi) = \pm 0,85$
 $T_{cool\ medium} = 40^{\circ}C$



Transient thermal impedance per module
 $T_{cool\ medium} = 40^{\circ}C$



Circuit diagram



For detailed technical information please refer the PrimeSTACK manual.

IPS-C3-V-Rev03

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- the conclusion of Quality Agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery depended on the realization of any such measures.

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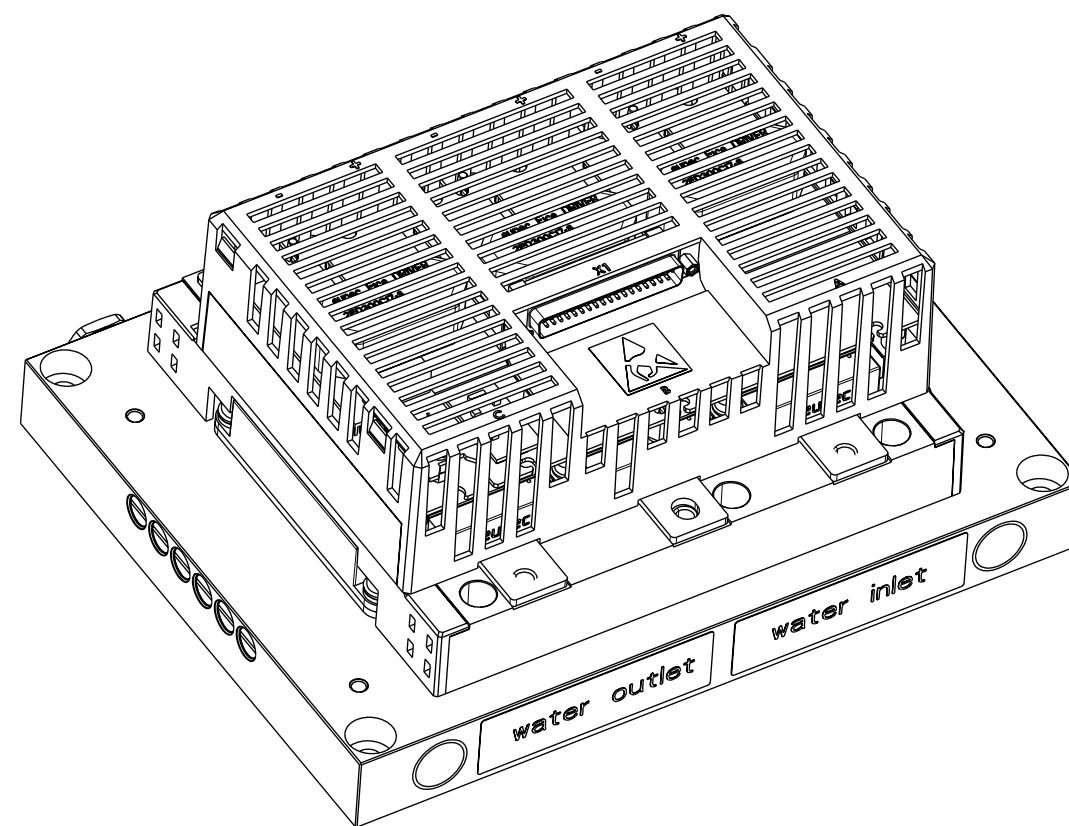
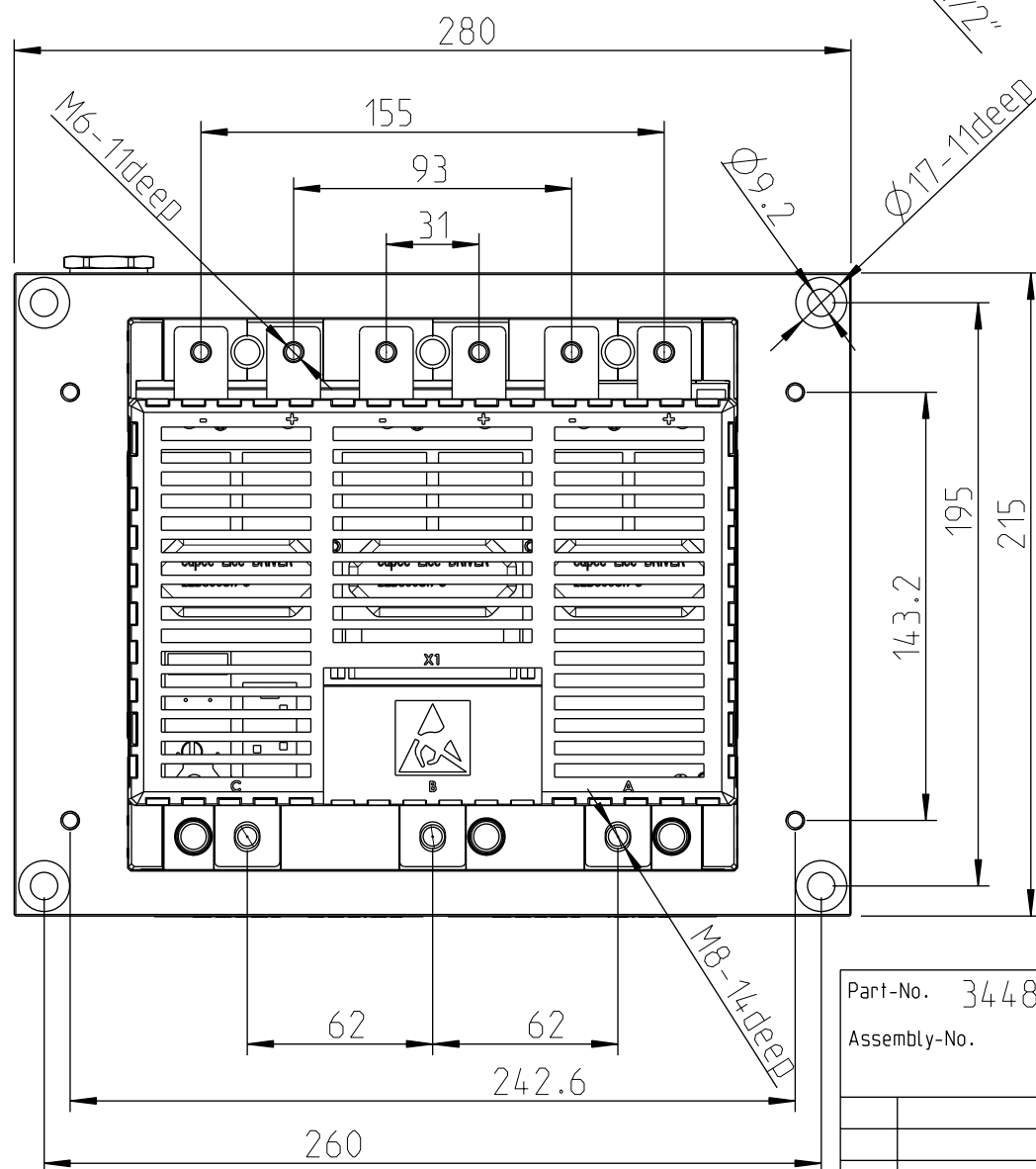
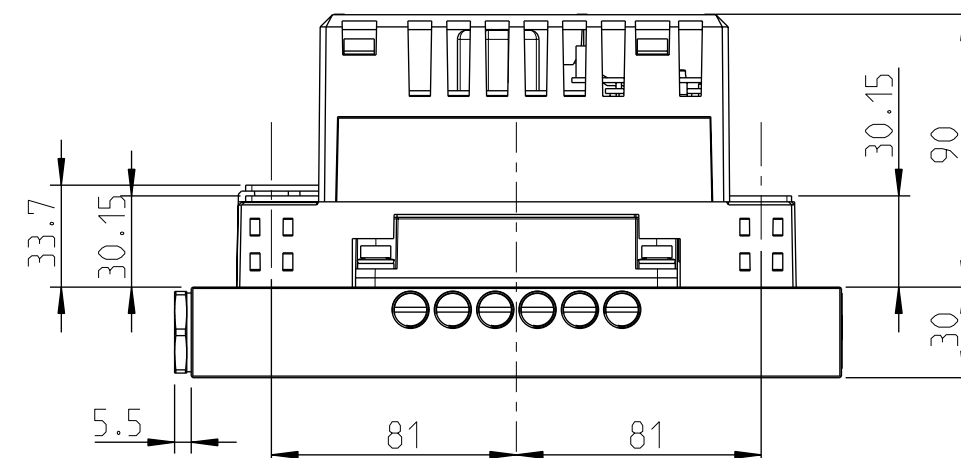
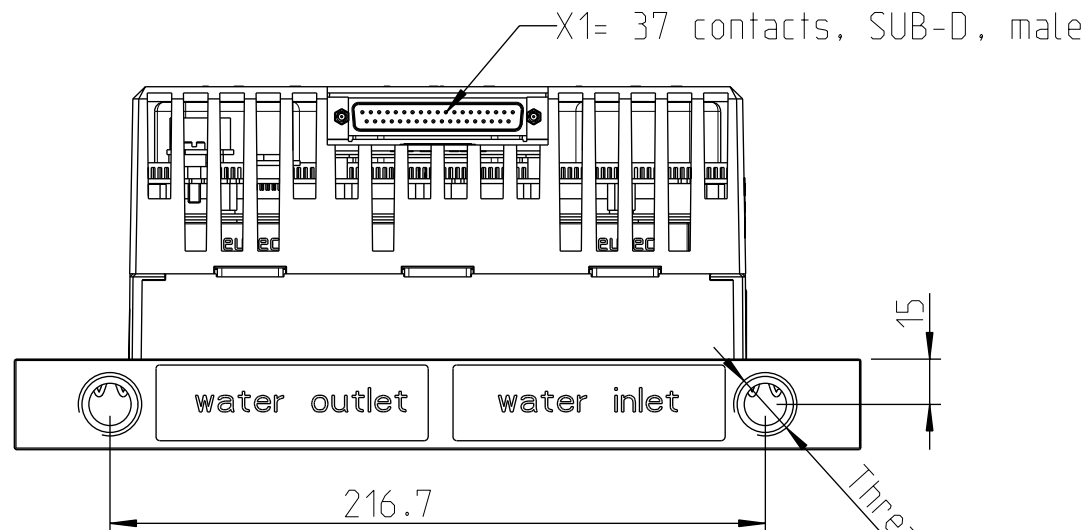
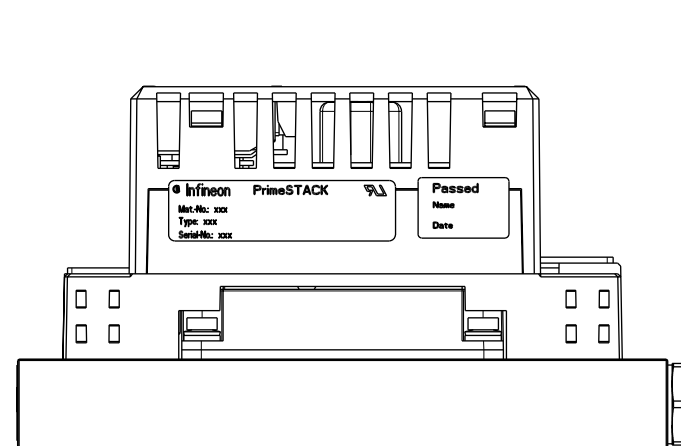
Sicherheitshinweise

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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Part-No. 34482		general Tolerance		Surface		Scale 2:5	
Assembly-No.				Material		Material-No.	
				Date		Name	
				Agent 12.11.10		Papenfort	
				Checked 12.11.10		gez. Kanschaf	
				Norm			
						Description	
						.PS...-3WH-..	
						(hose connectors optional)	
						Graph-No.	
						Version	
						Sheet	
						Constructed for	
						A3	

