Technical Information

PrimeSTACK **6PS0300R12KE3-3GH-VI5-C25-IN**

Vorläufige Daten
preliminary data

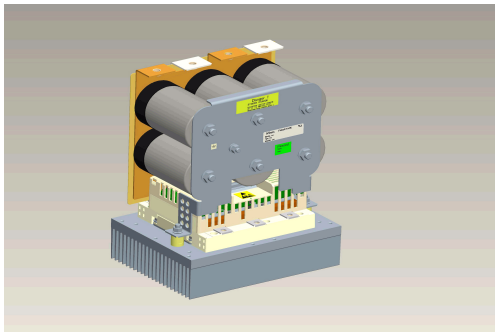
Key data

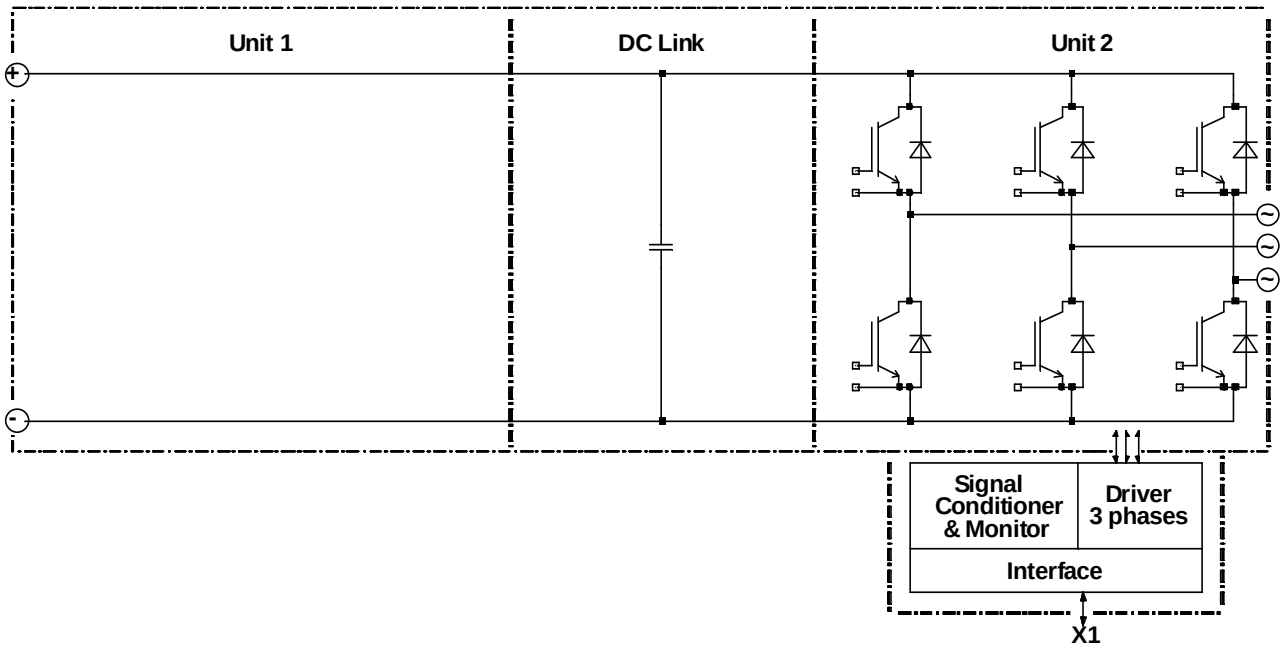
3x 234A rms at 300V rms, forced air (fan not implemented)

General information

Stacks for various inverter application. IGBT's, heat sinks, capacitors, drivers and sensors included. These are only technical data!
Please read carefully the complete document 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)
Implemented sensors	current, voltage, temperature
Semicond. (Unit 1)	none
DC Link	2.4mF
Semicond. (Unit 2)	3x FF300R12KE3
Driver signals IGBT	electrical CMOS 0 .. 15V
Standards	EN50178, UL94, prepared for UL508C
Sales - name	6PS03012E33G34160
Internal ID	34160
Mechanical drawing number	34160_MB
Electrical drawing number	6PS-C3-V-DR250-Rev01





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Vorläufige Daten
preliminary data

Notes

No active clamping included.

Electrical data

DC Link			min	typ	max	units
Voltage		V_{DC}		850	1050	V
Overvoltage shutdown				1050		V

Unit 2 AC			min	typ	max	units
Voltage	depending on controller	V_{Unit2}		300		V_{RMS}
Continuous current	V_{Unit2} = 300V_{RMS}, V_{DC} = 850V, T_{inlet} = 40°C, $T_J \leq$ 125°C, f_{Unit2} = 50Hz, f_{sw2} = 3000Hz, cos(phi) = 1,00	I_{Unit2}			234	A_{RMS}
Continuous current overload cap.	T_{inlet} = 40°C, for overload capability 150% for 60s			165		A_{RMS}
DC current	no rotating field, T_{inlet} = 40°C	$I_{Unit2\ DC}$			119,0	A_{av}
Overcurrent shutdown	within 15µs			460		A_{peak}
Switching frequency		f_{sw2}			18000	Hz
Power losses	V_{Unit2} = 300V, V_{DC} = 850V, T_{inlet} = 40°C, $T_J \leq$ 125°C, f_{Unit2} = 50Hz, f_{sw2} = 3000Hz, cos(phi) = 1,00, I_{Unit2} = 234A_{RMS}	P_{loss2}		2100		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}

Important component data			min	typ	max	units
DC Link capacitor		C_{DC}		2,40		mF
		type		Foil		
Temperature range			-40		+85	°C
Rated voltage	per device	U_R		1100		V_{DC}
Rated capacitance	per device	C_R		400		µF
Capacitance tolerance	per device	Tol	-10		+10	%
Maximum ripple current	per device, T_{amb} = 60°C	I_{Rmax}			40	A_{RMS}
wiring system	**s**eries, **p**arallel			1s, 6p		
Balance or discharge resistors	per DC Link unit	R_b		164,0		kΩ

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preliminary data

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			DR250		
Driver core				EiceDRIVER 2ED300C17-S		
Digital input level	resistor to GND 10,0kΩ, capacitor to GND 1nF	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 5mA; at 234A	$V_{ana\ out}$	5,04	5,14	5,24	V
Analog DC Link voltage output	load max 1mA; at 850V	$V_{DC\ out}$	7,17	7,32	7,47	V
Analog temperature output	load max 5mA; at T_{NTC} = 84°C correspond to T_j = 125°C	$V_{T\ out}$	10,49	10,70	10,91	V
Overtemperature shutdown	at T_{NTC} = 84°C correspond to T_j = 125°C	$V_{T\ out\ OT}$		10,7		V

Heat sink air cooled / Thermal data

			min	typ	max	units
Airflow	T_{Air} = 20°C, Pair = 1013hPa, dry- and dust free, measured on side of heat sink. according to DIN 41882	$\Delta V/\Delta t_{Air}$	485			m³/h
Air pressure drop		Δp_{Air}		410		Pa
Cooling air inlet temperature	heat sink temperature > -25°C	T_{inlet}	-25		40	°C

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IGBT data unit 2

			min	typ	max	units
Type	assumed					
collector-emitter saturation voltage	I_c = 300A; V_{ge} = 15V; T_{vj} = 125°C	$V_{CE\ sat}$		2		V
parameter for linear model	T_{vj} = 25°C	V_{ce1}		0,92		V
parameter for linear model	T_{vj} = 25°C	r_{ce1}		2,6		mΩ
parameter for linear model	T_{vj} = 125°C	V_{ce2}		0,845		V
parameter for linear model	T_{vj} = 125°C	r_{ce2}		3,85		mΩ
turn-on / turn-off energy loss per pulse	T_{vj} = 25°C	E_1		17 / 30		mJ
turn-on / turn-off energy loss per pulse	T_{vj} = 125°C	E_2		25 / 40		mJ
thermal resistance, junction to case	per IGBT	R_{thjc}		0,085		K/W
thermal resistance, case to heatsink	per IGBT	R_{thch}		0,031		K/W

Diode data unit 2

			min	typ	max	units
Type	assumed					
forward voltage	I_F = 300A; V_{ge} = 0V; T_{vj} = 125°C	V_F		1,65		V
parameter for linear model	T_{vj} = 25°C	V_{F1}		1,005		V
parameter for linear model	T_{vj} = 25°C	r_{F1}		2,15		mΩ
parameter for linear model	T_{vj} = 125°C	V_{F2}		0,81		V
parameter for linear model	T_{vj} = 125°C	r_{F2}		2,8		mΩ
reverse recovery energy	T_{vj} = 25°C	E_{rec1}		14		mJ
reverse recovery energy	T_{vj} = 125°C	E_{rec2}		26		mJ
thermal resistance, junction to case	per Diode	R_{thjc}		0,15		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 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/s²
Shock	according to IEC60721				40	m/s²
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	376	mm
Weight with heat sink	approximation			17,0		kg
Weight without heat sink	approximation			2,9		kg

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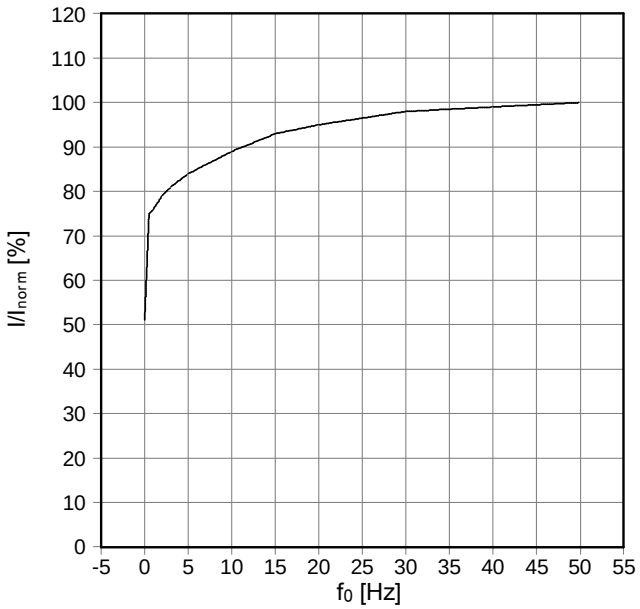
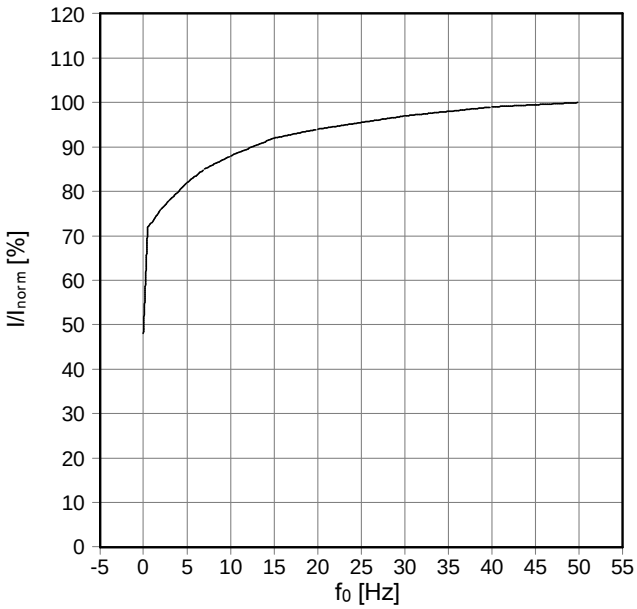
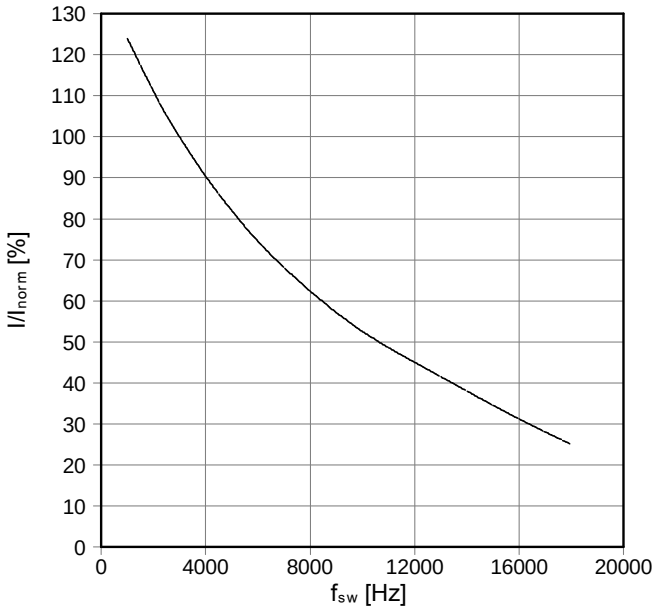
fo - derating curve IGBT (motor)
cos(phi) = 1
$T_{cool\ medium}$ = 40°C ; 100% = 234 A rms



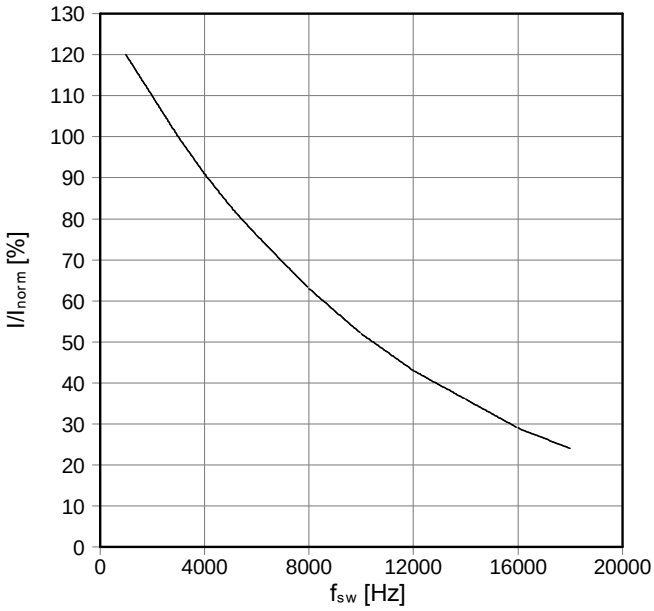
fo - derating curves Diode (generator)
cos(phi) = -1
$T_{cool\ medium}$ = 40°C ; 100% = 231 A rms



fsw - derating curve IGBT (motor)
cos(phi) = 1
$T_{cool\ medium}$ = 40°C ; 100% = 234 A rms



fsw - derating curve Diode (generator)
cos(phi) = -1
$T_{cool\ medium}$ = 40°C ; 100% = 231 A rms



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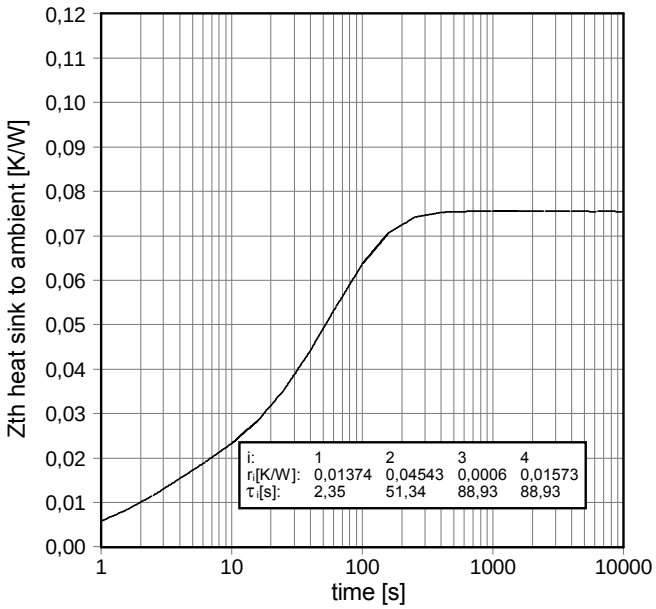
Transient thermal impedance per module
$T_{cool\ medium}$ = 40°C



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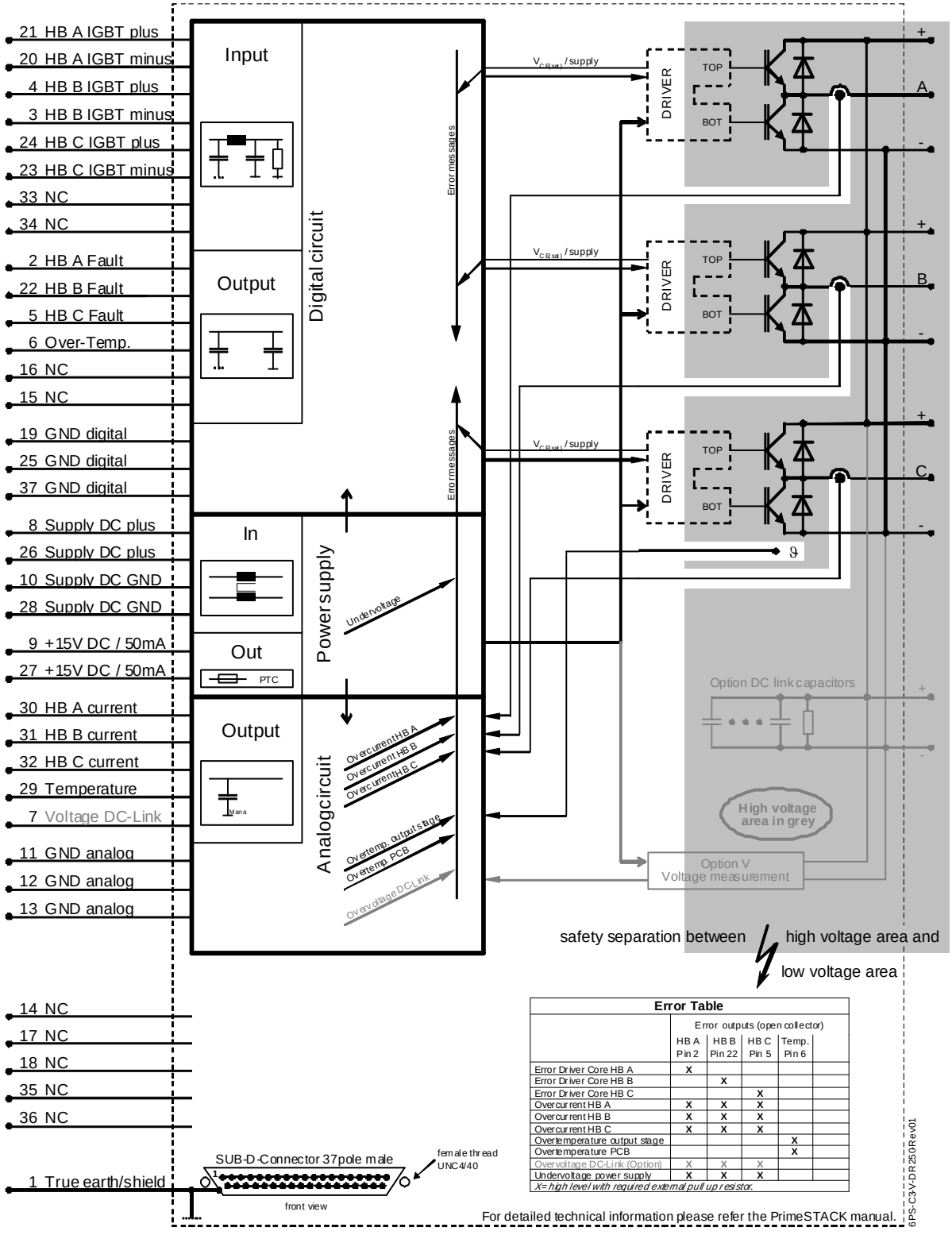
Circuit diagram



Error Table

	Error outputs (open collector)				
	HB A Pin 2	HB B Pin 22	HB C Pin 5	Temp. Pin 6	
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	
Overtemperature PCB				X	
Overvoltage DC-Link (Option)	X	X	X		
Undervoltage power supply	X	X	X		

X= high level with required external pull up resistor.

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- the conclusion of Quality Agreements;
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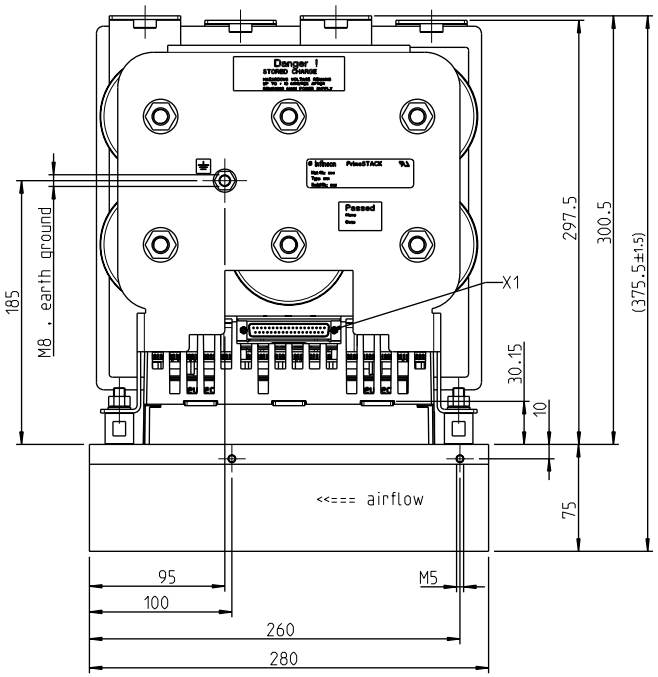
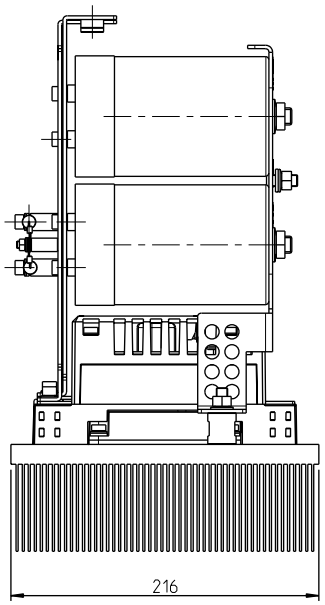
Sicherheitshinweise

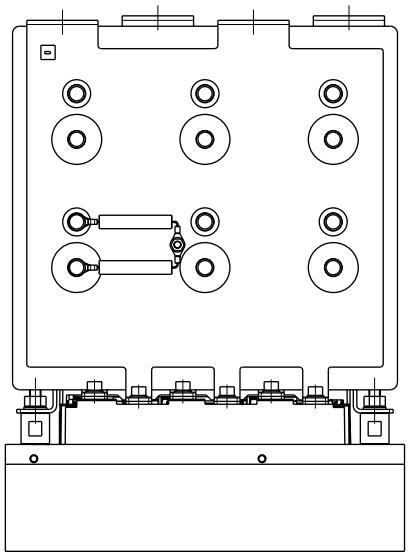
Bevor Sie mit der Installation und dem Betrieb der Baugruppe beginnen, lesen Sie bitte sorgfältig alle Sicherheitshinweise, Warnungen und beachten Sie die angebrachten Warnschilder. Vergewissern Sie sich, dass alle Warnschilder in leserlichem Zustand verbleiben und fehlende oder beschädigte Schilder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

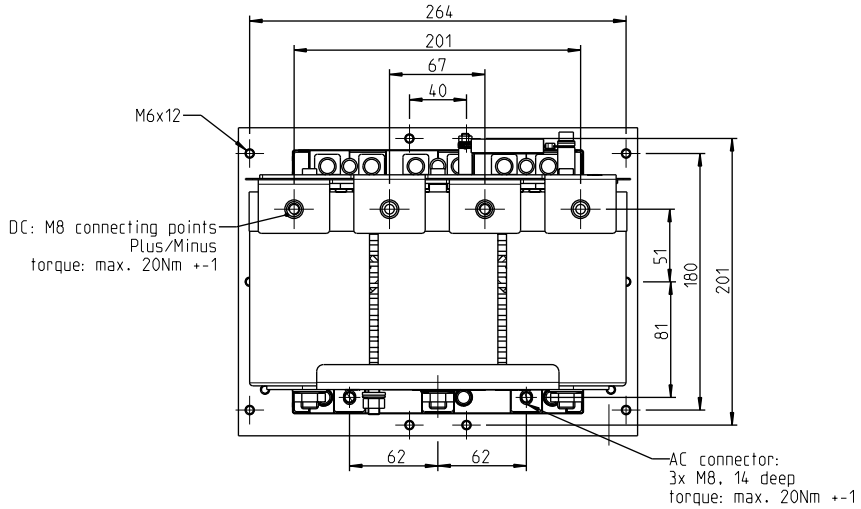
Safety Instructions

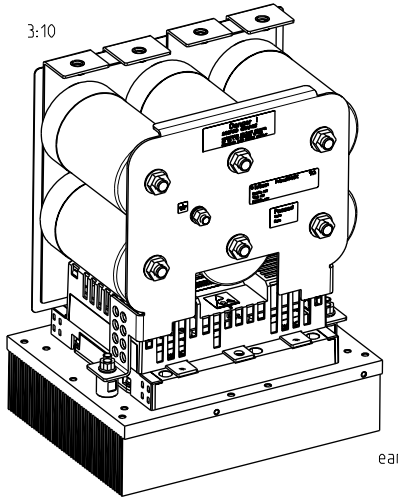
Prior to installation and operation, all safety notices and warnings and all warning signs attached to the equipment have to be carefully read. Make sure that all warning signs remain in a legible condition and that missing or damaged signs are replaced. To installation and operation, all safety notices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

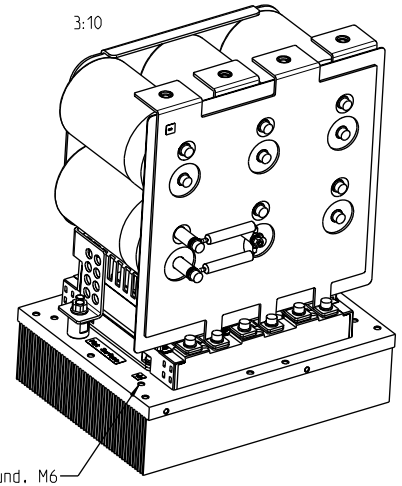












X1: SUB-D connector 37pole, male

Part-No. 34160				general Tolerance	Surface	Scale 2:5	
Assembly-No.						Material	
						Material-No.	
				Date	Name	Description	
			Agent	25.09.2009	Pelmer	PrimeSTACK+Capacitors	
			Checked	25.09.2009	gez.Bohlländer	6PSxxxxRxx xxx-3GH-xxx-C25xx	
			Norm				
						Graph-No. 34160	Version 0 / Sheet 1/2
01	label removed	10.05.11	Pe				
Vers.	Revision	Date	Name	Origin		Constructed for	A2

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