

Vorläufige Daten
preliminary data

Key data

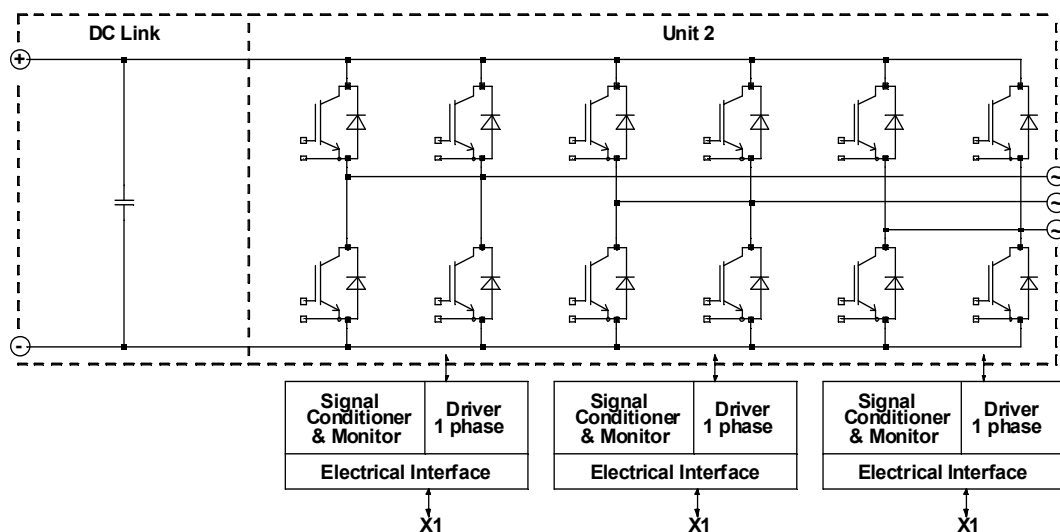
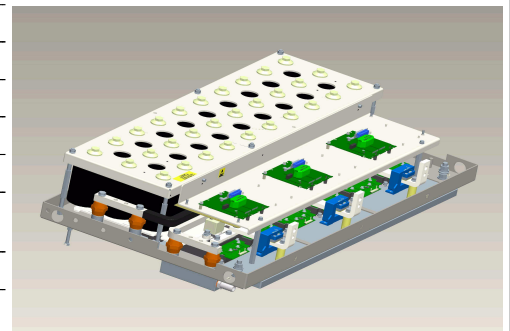
3x 750A RMS at 700V RMS, water cooled

General information

Stacks for various inverter application. Semiconductors, heat sinks, capacitors, 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	DC Link + B6I	
Application / Modulation	Inverter / Sine	
Load type	resistive, inductive	
Cooling	water cooled	
Implemented sensors	current, voltage, temperature	
Semicond. (Unit 1)	none	
DC Link	18.87mF	
Semicond. (Unit 2)	IGBT	6x FF1200R17KE3
Driver signals IGBT	electrical CMOS 0 ... 15V	
Standards	EN50178	
Sales - name	6MS24017E33W33847	
Internal ID	33847	
Mechanical drawing number	33847_MB	
Electrical drawing number	2PS-C2-V	
Dimensions (width x depth x height)	1090 mm x 596 mm x 272 mm	
Weight	90 kg	



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6MS2400R17KE3-3WAH-I6C20VIN



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Note

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}		1150	1250	V
Overvoltage shutdown	within 5000µs			1250		V

Unit 2 AC			min	typ	max	units
Voltage	depending on controller	V_{Unit2}		700		V_{RMS}
Continuous current	$V_{Unit2} = 700V_{RMS}$, $V_{DC} = 1200V$, $T_{inlet} = 50^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 50Hz$, $f_{sw2} = 2500Hz$, $\cos(\phi) = 0,95$	I_{Unit2}			750	A_{RMS}
Continuous current overload cap.	$T_{inlet} = 50^{\circ}C$, for overload capability 150% for 60s			613		A_{RMS}
Short time current	$T_{inlet} = 50^{\circ}C$, 10s, every 180s, initial load = 736 A_{RMS}	I_{Unit2}			920	A_{RMS}
DC current	no rotating field, $T_{inlet} = 50^{\circ}C$	$I_{Unit2\ DC}$			300,0	A_{av}
Overcurrent shutdown	within 15µs			1300		A_{peak}
Switching frequency		f_{sw2}			3000	Hz
Power losses	$V_{Unit2} = 700V$, $V_{DC} = 1200V$, $T_{inlet} = 50^{\circ}C$, $T_J \leq 125^{\circ}C$, $f_{Unit2} = 50Hz$, $f_{sw2} = 2500Hz$, $\cos(\phi) = 0,95$, $I_{Unit2} = 750A_{RMS}$	P_{loss2}		11150		W
Power factor		$\cos(\phi)_{Unit2}$	-1,00		1,00	

General data			min	typ	max	units
Power losses (PCB and capacitor)		$P_{loss\ aux}$			400	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}

Important component data			min	typ	max	units
DC Link capacitor		C_{DC}		18,87		mF
		type	Electrolytic Capacitor			
wiring system	series, parallel		3s, 10p			
Balance or discharge resistors	per DC Link unit	R_b		6,0		kΩ

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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		3 x DR240			
Driver core			EiceDRIVER 2ED300C17-S			
Digital input level	resistor to GND 10,0kΩ, 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		15,0	V
Analog current outputs Unit 2	load max 1mA; at 750A	$V_{ana out}$	2,87	2,93	2,99	V
Analog DC Link voltage output	load max 1mA; at 1250V	$V_{DC out}$	8,67	8,85	9,03	V
Analog temperature output	load max 1mA; at $T_{NTC} = 73^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T out}$	8,05	8,21	8,37	V
Overtemperature shutdown	at $T_{NTC} = 73^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T out OT}$		8,21		V

Heat sink water cooled / Thermal data

			min	typ	max	units
Water flow	according cooling water specification from infineon	$\Delta V / \Delta t_{Water}$	12			dm³/min
Water pressure drop		Δp_{Water}		550		mbar
Water pressure					8	bar
Cooling water inlet temperature		T_{inlet}	-40		50	°C
Water connection				3/4		in

IGBT data unit 2

			min	typ	max	units
Type	assumed					
collector-emitter saturation voltage	$I_c = 1200A$; $V_{ge} = 15V$; $T_{vj} = 125^{\circ}C$	$V_{CE sat}$		2,4		V
parameter for linear model	$T_{vj} = 25^{\circ}C$	V_{ce1}		1,1		V
parameter for linear model	$T_{vj} = 25^{\circ}C$	r_{ce1}		0,75		mΩ
parameter for linear model	$T_{vj} = 125^{\circ}C$	V_{ce2}		1		V
parameter for linear model	$T_{vj} = 125^{\circ}C$	r_{ce2}		1,167		mΩ
turn-on / turn-off energy loss per pulse	$T_{vj} = 25^{\circ}C$	E_1		240 / 305		mJ
turn-on / turn-off energy loss per pulse	$T_{vj} = 125^{\circ}C$	E_2		350 / 445		mJ
thermal resistance, junction to case	per IGBT	R_{thjc}		0,021		K/W
thermal resistance, case to heatsink	per IGBT	R_{thch}		0,017		K/W

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Diode data unit 2

			min	typ	max	units
Type	assumed					
forward voltage	$I_F = 1200A$; $V_{ge} = 0V$; $T_{vj} = 125^\circ C$	V_F		1,9		V
parameter for linear model	$T_{vj} = 25^\circ C$	V_{F1}		1,15		V
parameter for linear model	$T_{vj} = 25^\circ C$	r_{F1}		0,542		mΩ
parameter for linear model	$T_{vj} = 125^\circ C$	V_{F2}		1		V
parameter for linear model	$T_{vj} = 125^\circ C$	r_{F2}		0,75		mΩ
reverse recovery energy	$T_{vj} = 25^\circ C$	E_{rec1}		190		mJ
reverse recovery energy	$T_{vj} = 125^\circ C$	E_{rec2}		340		mJ
thermal resistance, junction to case	per Diode	R_{thjc}		0,048		K/W
thermal resistance, case to heatsink	per Diode	R_{thch}		0,039		K/W

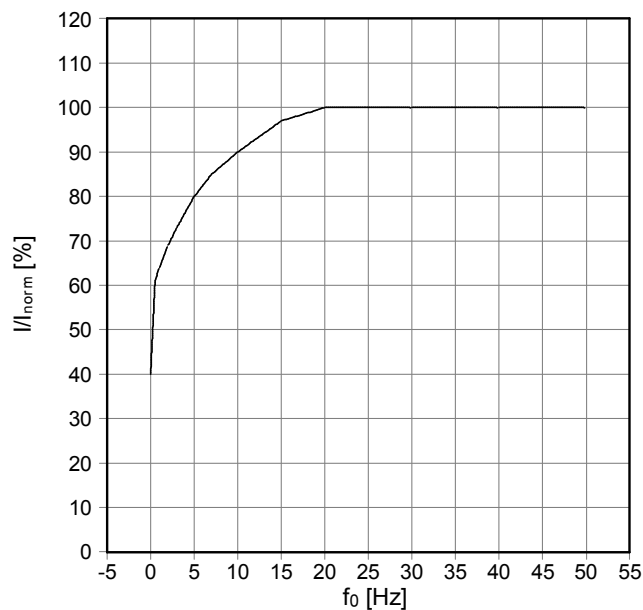
Environmental conditions

			min	typ	max	units
Storage temperature		T_{stor}	-40		65	°C
Ambient temperature		T_{amb}	-25		55	°C
Operating temperature	see chapter Heat sink water cooled / Thermal data					
Cooling air velocity (PCB and capacitor)		$V_{Air PCB}$	2,0			m/s
Air pressure	standard atmosphere	p_{Air}	900		1100	hPa
Humidity	no condensation	Rel. F	0		95	%
Installation height			0		1000	m
Vibration	according to EN60068				10	m/s²
Continuous vibration	according to EN60068				20	m/s²
Shock	according to EN60068				100	m/s²
Protection degree			IP00			
Pollution degree			2			
Dimensions	width × depth × height		1090	596	272	mm
Weight with heat sink	approximation			90,0		kg
Weight without heat sink	approximation			65,0		kg

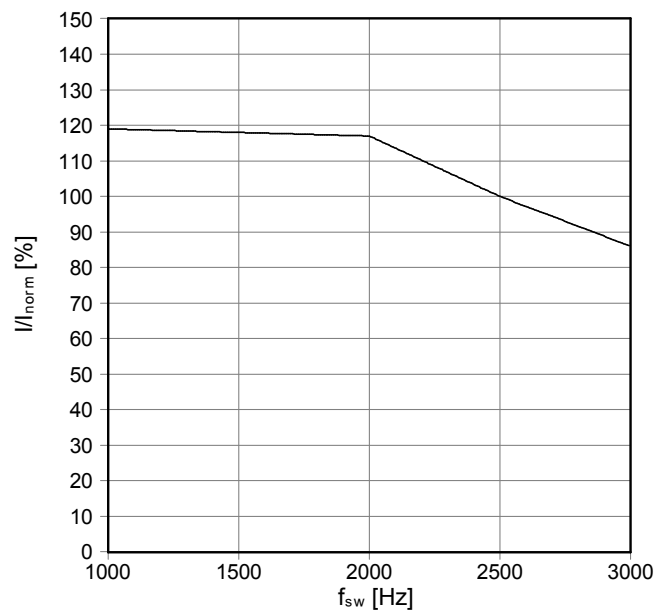
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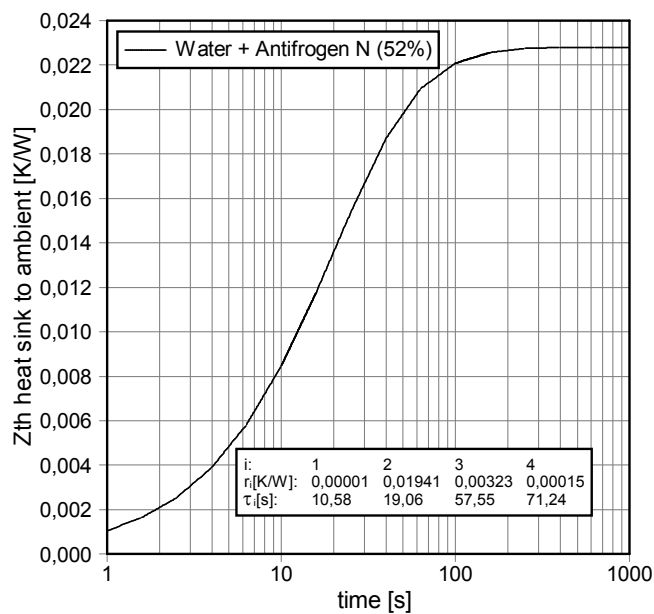
f₀ - derating curve IGBT (motor)
cos(φ) = 0,95
T_{cool medium} = 50°C



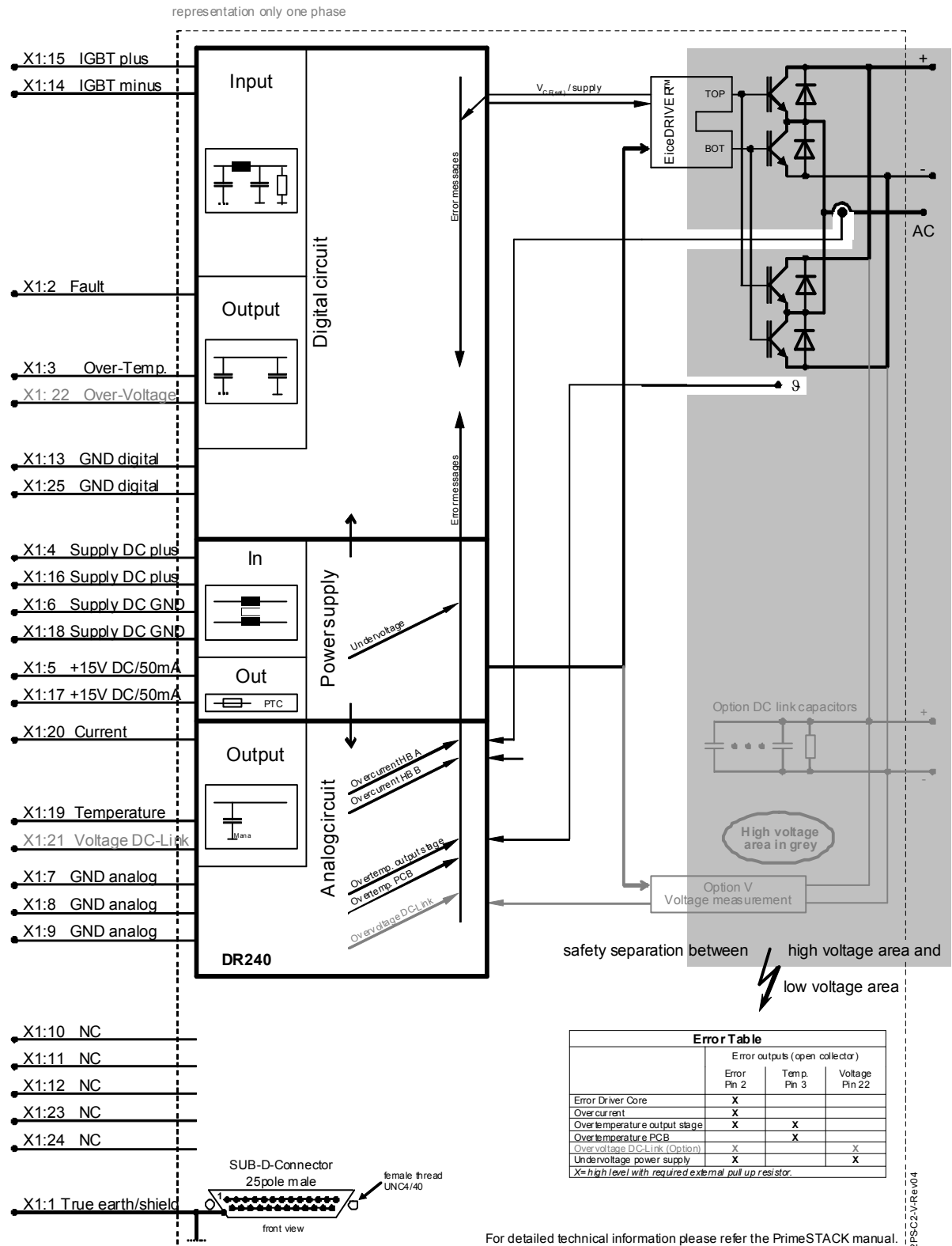
f_{sw} - derating curve IGBT (motor)
cos(φ) = 0,95
T_{cool medium} = 50°C



Transient thermal impedance per module
T_{cool medium} = 50°C



Circuit diagram



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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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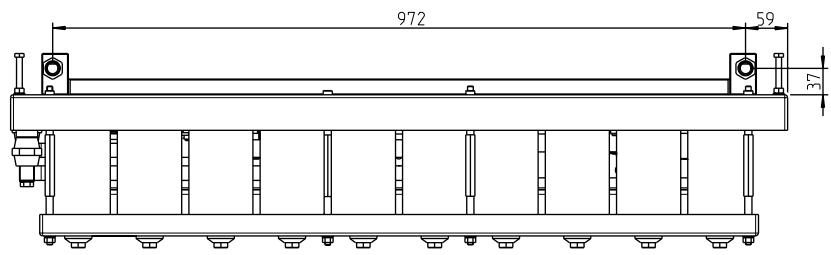
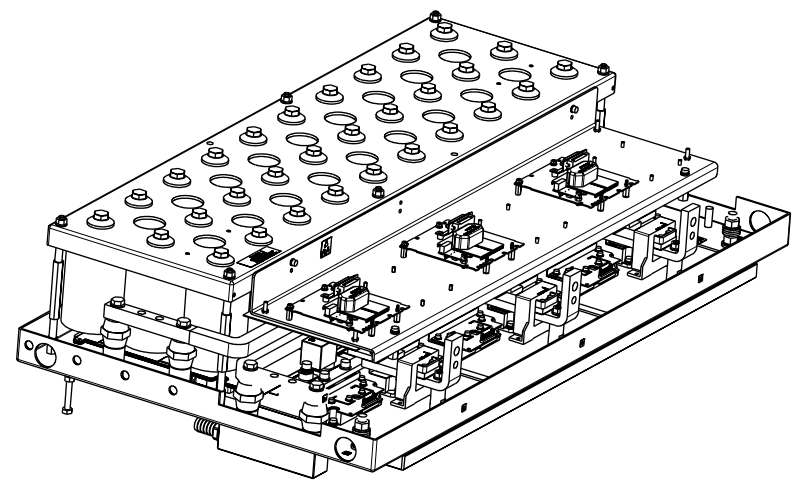
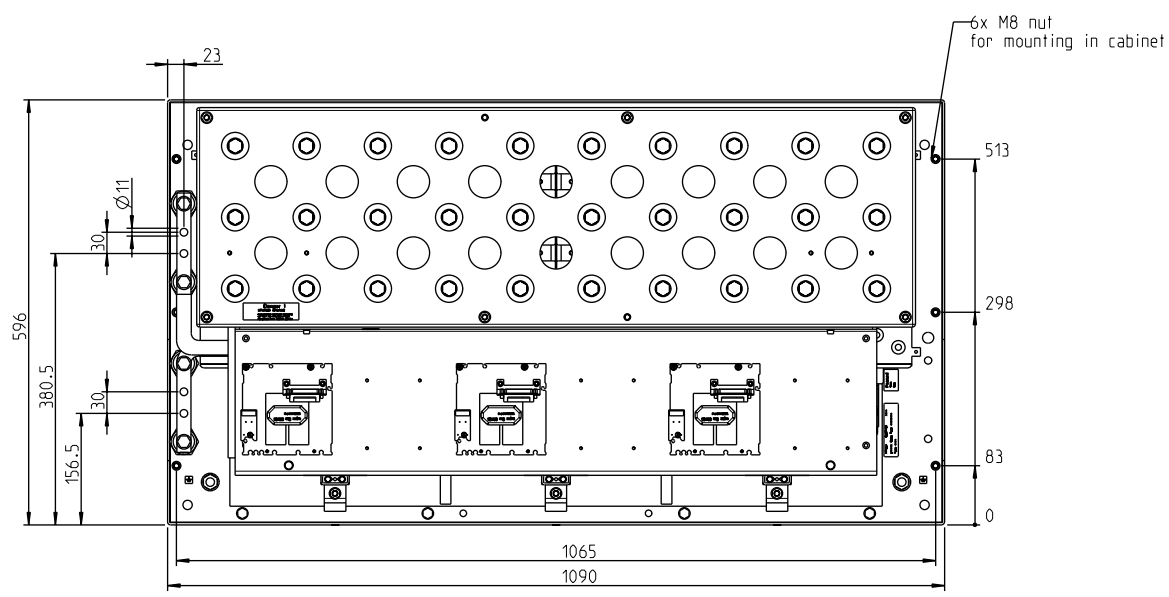
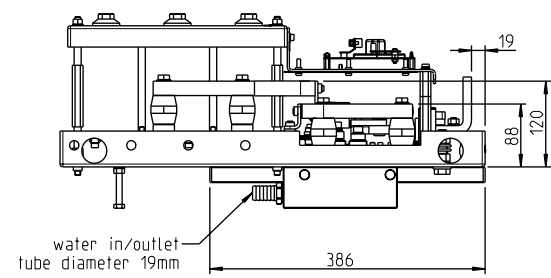
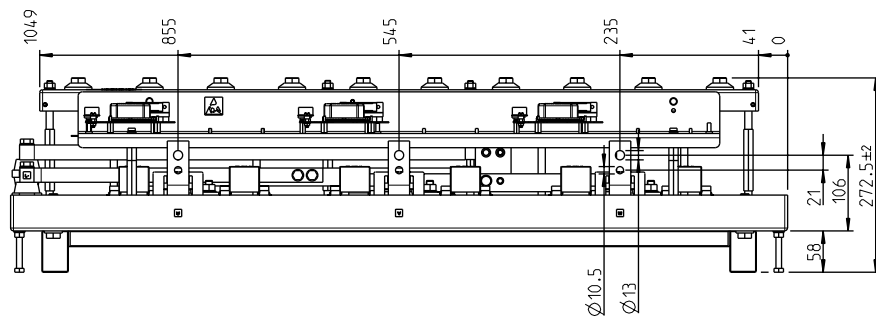
Sicherheitshinweise

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. 33847			general Tolerance Surface		Scale 1:5	
Assembly-No.					Material	
					Material-No.	
					Description	
					Outline MS3 6MSxx00Rxx xxx-3W AH-Cxx	
					Graph-No.	
					Version	
					Sheet	
					Constructed for	

01 Kithervariante"05.08.09		Pe	
Vers.	Revision	Date	Name
Q		10	11
		12	A2