

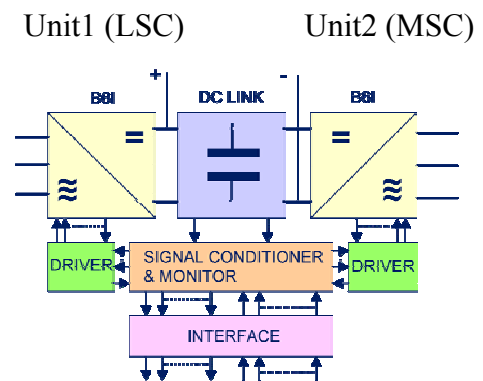
Key Data

3 x 330A AC at 690V AC, aircooled @ 45°C

General Information

Stack with IGBT, heatsinks, capacitors, drivers and sensors for several inverter applications. These are only technical data! Please read heedful the complete documentation and attend the adopted design environment! Especially the EMC environment and the controller functionality.

Topology	B6I + DC Link + B6I	
Load Type	Resistive, inductive load	
Cooling	Forced air, Fan optional	
Targed Application	Wind	
Extra	Available in Master [M] or Slave [S] Configuration. Also available with 20ms Shorttime Overload at Unit 2 [TSSa] Opt. Resistors for Sinewavefilters	
Drivercore	Scale Driver	
Monitors	Current-, Voltage-, Temperature-Monitoring	
Module (Unit1)	IGBT	3x FF1200R17KE3
Module (Unit2)	IGBT	3x FF1200R17KE3
Interface	Electrical, opt. optical	
Standards	EN50178, UL94, prepared for UL508C	
Product ID (eupec)	Master [TSSa] Slave [TSSa]	
Drawing No.	37001450MB [TSSa]	
Circuit Diagram No.	57000001	



Electrical Data

	Parameter		Min	Typ	Max	
Assumed Linevoltage	For Isolation-Management	VLine		690		VRMS
DC Link Voltage		VDC		1100	1219	V _{av}
DC Link Overvoltage Shutdown	Within 100µs			VDCmax		V
DC Link Current		IDCLink		-		ADC
Voltage Unit1		VUnit1		690		VRMS

Continuous Current Unit1	$\vartheta = \vartheta_{air_inlet}$	IUnit1			193	ARMS
Shorttime Current Unit1	10s, every 180s, initial load = IUnit1	IUnit1_10			231	ARMS
Pulse Current Unit1	Sinehalfwave 20ms				-	Apeak
DC Current at Unit1	No rotating field, $\vartheta = \vartheta_{air_inlet}$,	IUnit1_DC			0,4* IUnit1	Aav
Overcurrent Shutdown Unit1	Percentage of IUnit1. Within 15 μ s			150		%
Switching Freq. Unit1		fsw1			2250	Hz
Power Losses Unit1	$V = V_{unit1_min}$, $I = I_{Unit1}$, $fsw = fsw1$	Ploss1		2850		W
Voltage Unit2	Depending on Controller	VUnit2		690		VRMS
Continuous Current Unit2	$\vartheta = \vartheta_{air_inlet}$, $\vartheta_{chip} \leq 125^{\circ}C$, $f_{Unit2} > 5Hz$	IUnit2			330	ARMS
Shorttime Current Unit2	$\vartheta_{air_inlet} \leq 40^{\circ}C$, 10s, every 180s, initial load = IUnit2	IUnit2_10			396	ARMS
Pulse Current Unit2	Sinehalfwave 20ms, starting from IUnit2. Only [TSS] Version	IUnit2peak			1650	Apeak
DC Current at Unit2	No rotating field, $\vartheta = \vartheta_{air_inlet}$,	IUnit2_DC			0,4* IUnit2	ADC
Overcurrent Shutdown Unit2	Percentage of IUnit2. Within 15 μ s Basic Version			150		%
	Only [TSS] Version			500		%
Switching Freq. Unit2		fsw2			2250	Hz
Power Losses Unit2	$I = I_{Unit2}$, $fsw = fsw2$	Ploss2		4200		W
Power Losses (PCB and Capacitor)		Ploss_aux			500	W
Filterresistors at Output Unit2	Applicable for Sinewavefilters (damping) only in Produkt ID 24255 and 24256	RFilter		22		Ohm
		PRFilter		100		Watt
Auxiliary Voltage		Vaux	18	24	30	Vav
Auxiliary Power Demand	$V_{aux} = 24 V_{av}$, to feed with B6U	Paux		80		W
EMC Test	According EN61800-3 at named interfaces	Power	VBurst		2	kV
		Control	VBurst		1	
		Aux (24V)	VSurge		1	kV
Insulation Test Voltage	According EN50178 $f = 50Hz$, $t = 1min$	Visol		1,8		kVRMS

Important Component Data

DC Link Capacitor		CDC		15,67		mF
DC Link Capacitor		Type	Elcap			
Capacitor Design Lifetime (eupec approximation)	Loadcycle: Wind	LTD		t.b.d.		Year
	Loadcycle: Solar	LTD		-		Year
	Loadcycle: Industrial	LTD		-		Year

Requirements to the Powersource

Assumed Inductance Of Feeding Powersource	(Necessary inductance not included, feeded by B6U)	LFeed		257		μH
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Fan Data (assumed for variant [-G])

Fan Type	For variant [-F] Assumed for [-G]		t.b.d.			
Fan Voltage		V _{Fan}		400		VRMS
Fan Frequency		f _{Fan}		t.b.d.		Hz
Fan Current		I _{Fan}		t.b.d.		ARMS
Fan Air Pressure	Assumed	Δp _{AirFan}		400 t.b.d.		Pa

Controller Interface Data

Driver	Master Basic Version	PCB	TR100			
	Master [TSS] Version		TR101			
	Slave		TR100			
	See Datasheets					
Paralleling Interface	Master	PCB	SAD101			
	Slave		-			
	See Datasheet					
Optical Interface	Master	PCB	OEA101			
	Slave		-			
	See Datasheet					
Digital Input Level	Resistor to Gnd (1,8k) High = on min 15mA	V _{in}	0		15	V
Digital Output Level	Open collector Low = ok max 15mA	V _{out}	0		15	V
Analog Current Outputs Unit1	Load max 1mA at I _{Unit1}			2,27		V
Analog Current Outputs Unit2	Load max 1mA at I _{Unit2} Basic Version			4		V
	[TSS] Version			2		V
Analog DC Link Voltage Output	Load max 1 mA At V _{DCmax}	V _{DCout}		9		V
Analog Temperature	Load max 1mA	V _{9out}		9		V

Out	At $\vartheta_j=125^\circ\text{C}$					
Optical Input Level	optionally		12			μW
Optical Output Level	optionally				60	μW

Requirements to the Controller

EMC Protection	According EN61800-3 at auxiliary power and control interface		1			kV
EMC Environment			Shield concept with TE (True Earth) separated from PE, HF conform installation			
Drive Pulse Time		t_{on_min}	10			μs
Blockout Time		t_{pause}	10			μs
Overvoltage Shut Down Reaction Time	After overvoltage message by ModSTACK Interface				50	μs
Overcurrent Shut Down Reaction Time	After overcurrent message by ModSTACK Interface				10	μs

Mechanical Data

Air velocity	$\vartheta_{Air}=20^\circ\text{C}$ $p_{Air}=1013\text{ hPa}$	v_{Air}	t.b.d. 12			m/s
Airflow heatsink	Dry- and dustfree, measured outside of heatsink.	dV/dt_{Air}	2500 t.b.d.			m^3/h
Air Pressure Drop heatsink	According DIN 41882	Δp_{Air}		t.b.d. 400		Pa
Water velocity	According Coolingwater Specification from eupec	v_{Water}				m/s
Waterflow heatsink		dV/dt_{Water}	-			m^3/h
Water Pressure Drop heatsink		Δp_{Water}		-		Pa
Dimensions	Width x Depth x Height		1090	596	345	mm
Mass	Approximation			101		kg
Storage Temperature Range		ϑ_{stor}	-40		+65	$^\circ\text{C}$
Operating Temperature range (PCB and Capacitor)	Minimal 0°C for optional optical interface	ϑ_{op}	-25 (0)		+55	$^\circ\text{C}$
Cooling Air Inlet Temperature (Heatsink)		ϑ_{air_inlet}	-25		+40	$^\circ\text{C}$
	Heatsink temperature > -25°C		-40			
Cooling Air velocity (PCB and Capacitor)		v_{Air_PCB}	2			m/s
Air Pressure	Standard atmosphere	p_{Air}	900		1100	hPa
Humidity	No Condensation	Rel. F	0		95	%

ModSTACK



Datasheet: B6I+B6I 690/1100-330

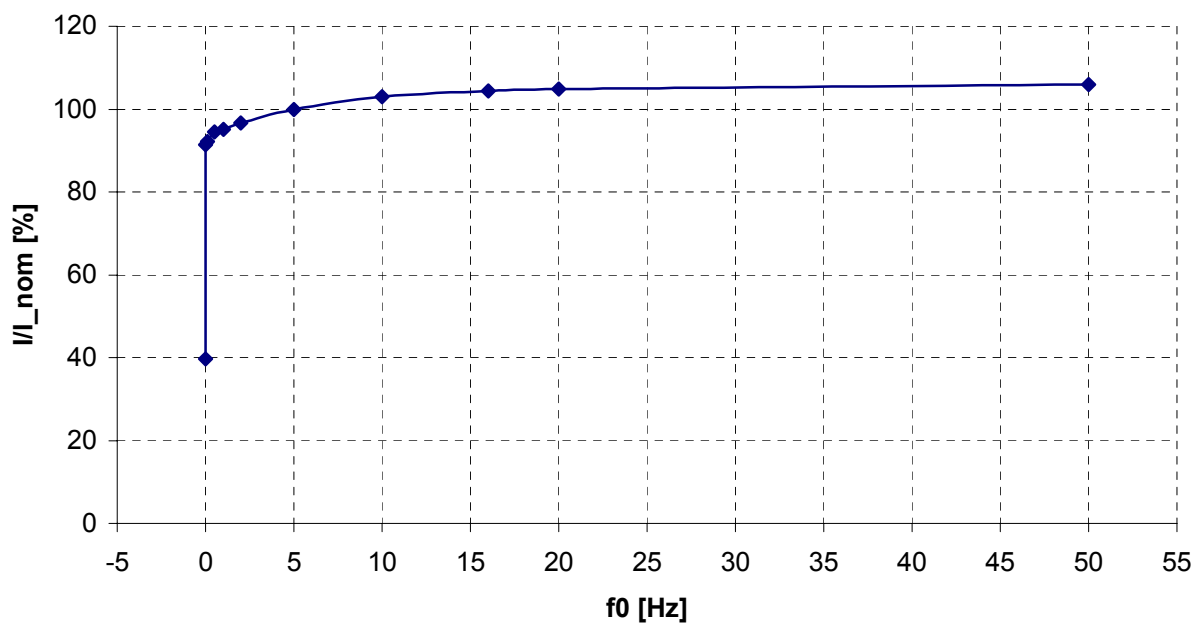
Preliminary Targeted Data

Installation Height			0		1000	m
Vibration	EN60068-2-6, Fc 10..59Hz 0,075mm				10	m/s ²
Permanence Vibration	EN60068-2-6, Fc 10-150Hz, 20 Cycles				20	m/s ²
Shock	EN60068-2-27, Ea Halfsine 11ms, 3 pulses				100	m/s ²
Protection Degree			IP00			
Pollution Degree			2			
Overtoltage Category			III			

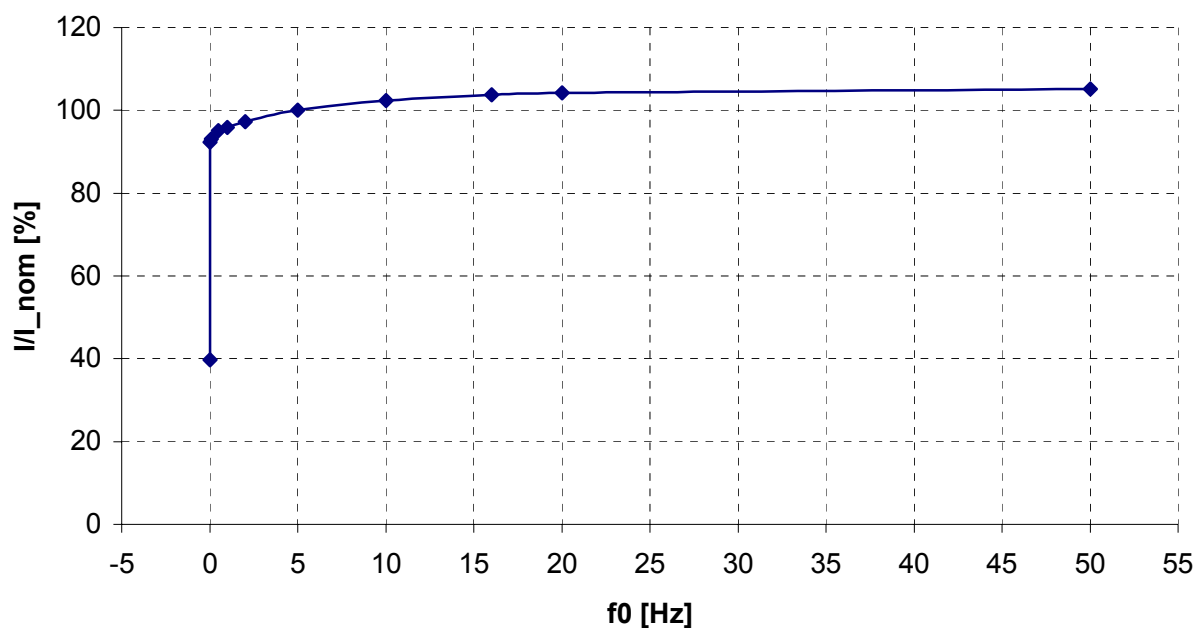
Derating Curves (IGBT Part)

Current derating at low rotating field frequency (f_0). **Maximal 100% current is allowed.**

$\cos(\phi) = 0.64$, (motor)
 $\Theta_{air} = 40^\circ\text{C}$

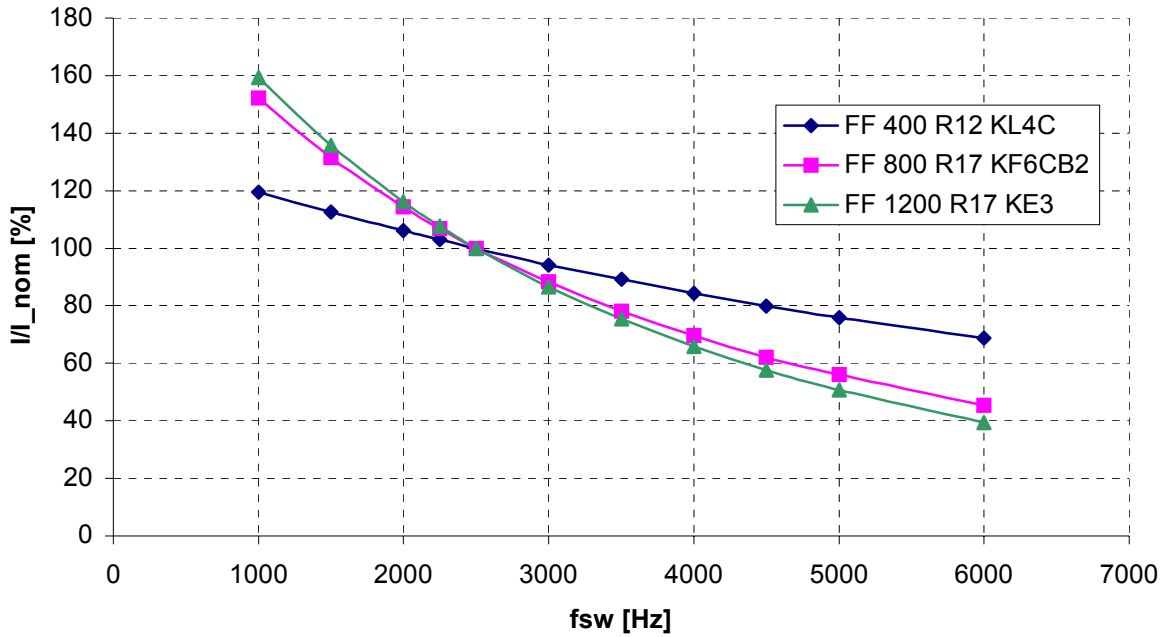


$\cos(\phi) = -0.64$, (generator)
 $\Theta_{air} = 40^\circ\text{C}$

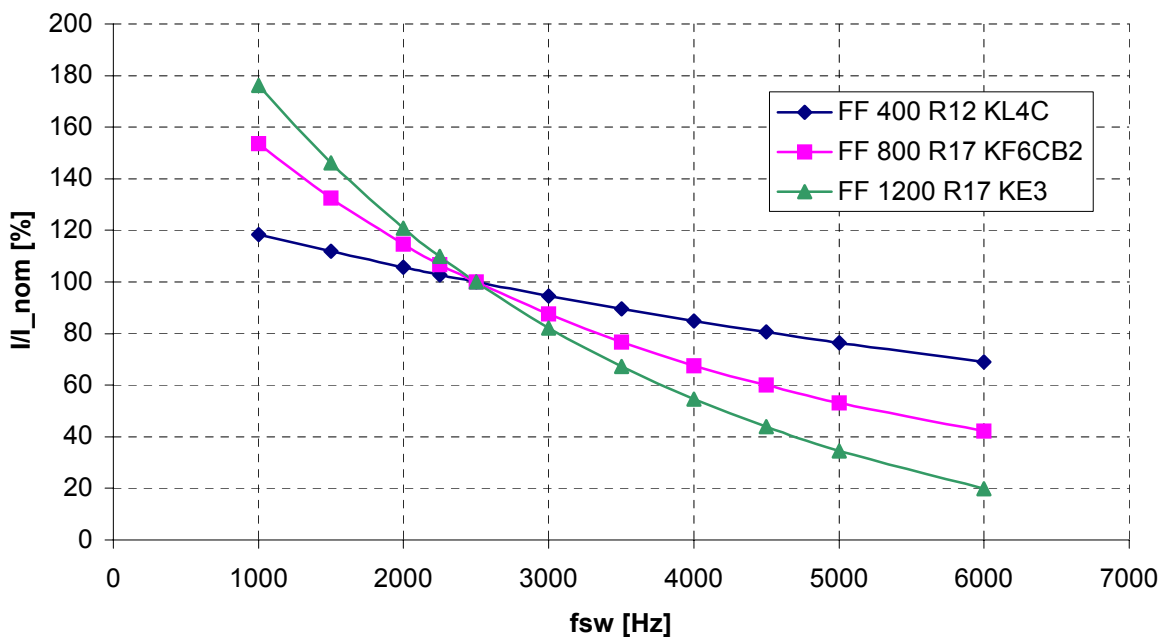


Current derating at different switching frequencies. See datatable for nominal switching frequency. In this drawing 2500Hz ist assumed. **Maximal 100% current is allowed.**

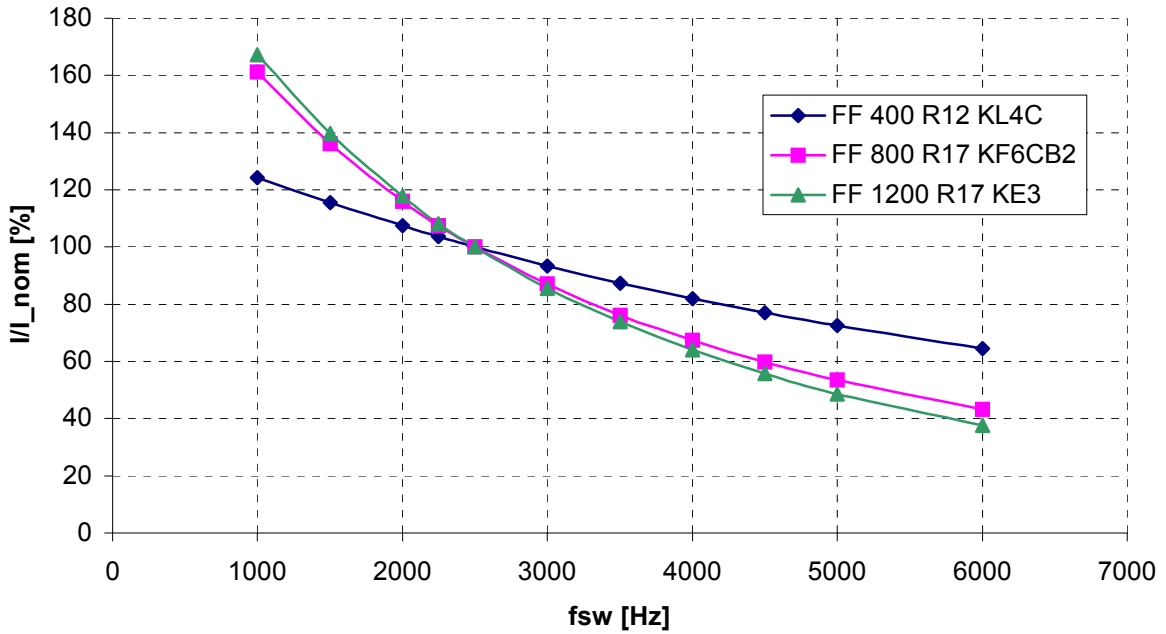
**IGBT, $\cos(\phi) = 0.64$
Theta_{air} = 40°C**



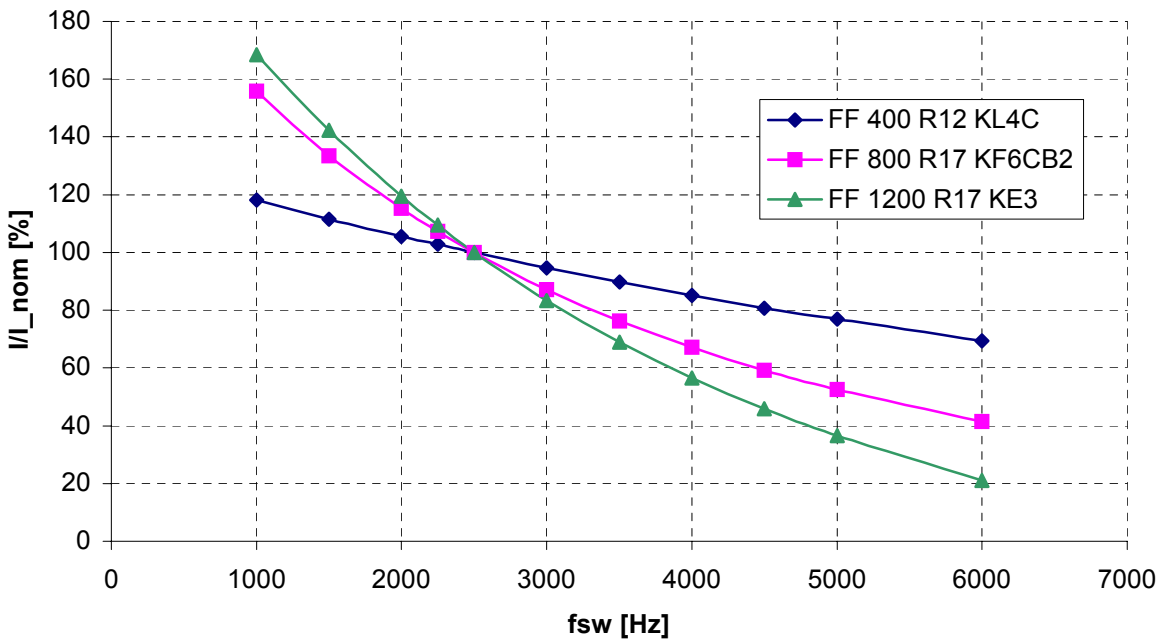
**Diode, $\cos(\phi) = 0.64$
Theta_{air} = 40°C**



IGBT, $\cos(\phi) = -0.64$
 $\Theta_{air} = 40^{\circ}\text{C}$



Diode, $\cos(\phi) = -0.64$
 $\Theta_{air} = 40^{\circ}\text{C}$



Miscellaneous

This technical information specifies semiconductor stacks but promises no characteristics. It is valid in combination with the belonging technical notes.

This document may be changed without prior notice.

Warning!

Prior to installation and commissioning 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 missing or damaged signs are replaced.

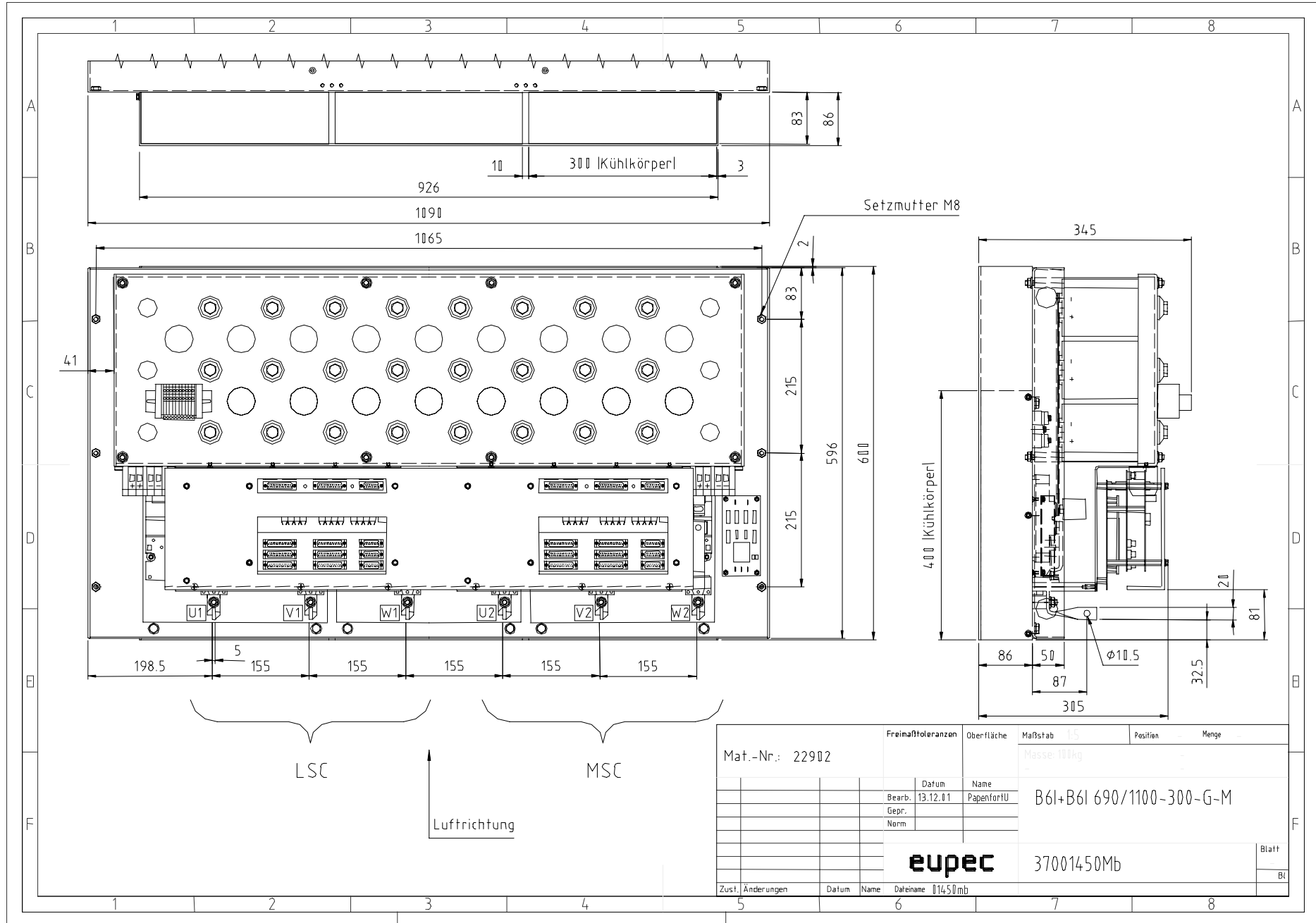
The safety instructions have to be strictly adhered to.

The manual contains detailed information on all technical topics with regard to the eupec ModSTACK. For further details regarding publications of the eupec ModSTACK and information on other publications in the area of ModSTACKs please contact your nearest eupec branch or visit our website: <http://www.eupec.com>.

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ModSTACK B6I+B6I 690/1100-330, Drawing, Preliminary Data



Mat.-Nr.: 22902		Freiमतोलеранzen	Oberfläche	Maßstab 1:5	Position	Menge
				Masse 100kg		
	Datum	Name		B6I+B6I 690/1100-300-G-M		
	Bearb. 13.12.01	Papenfortu				
	Gepr.					
	Norm					
		eupec			37001450Mb	Blatt
Zust.	Änderungen	Datum	Name	Dateiname 01450mb		Bl.