

Vorläufige Daten
preliminary data

Key data

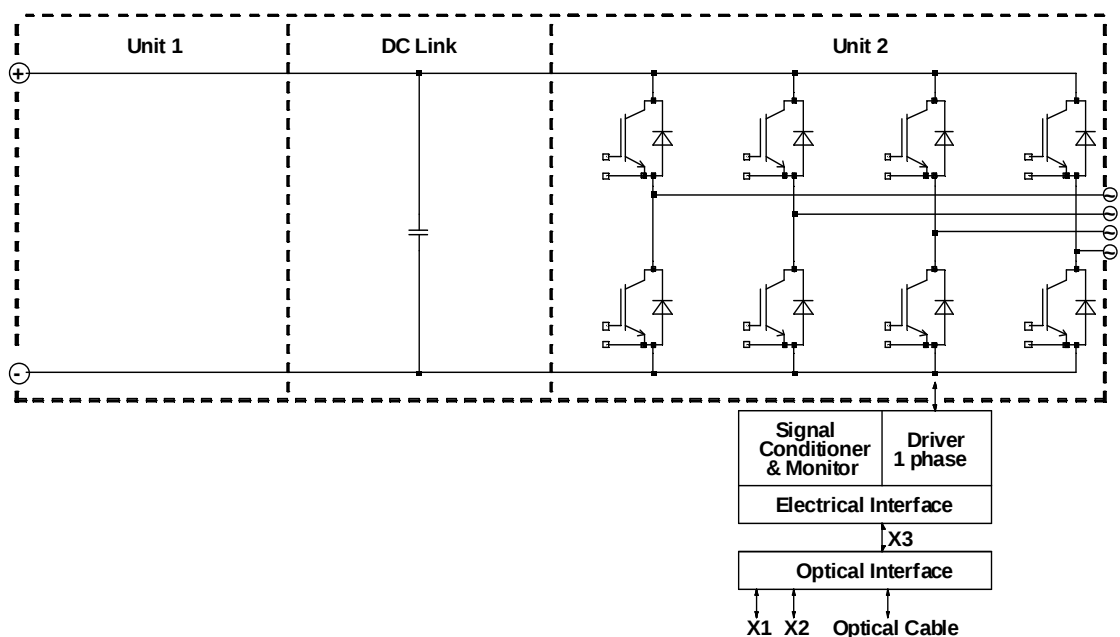
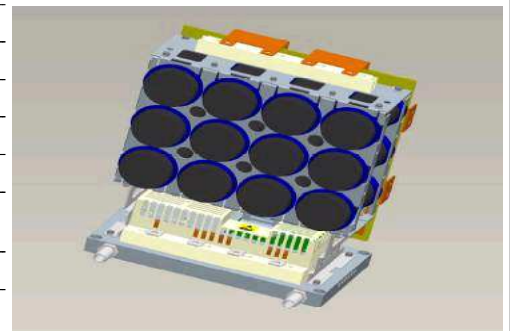
1x 824A rms at 690V rms, water cooled

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	1/2 B2I
Application / Modulation	Inverter / Sine
Load type	resistive, inductive
Cooling	water cooled
Implemented sensors	current, voltage, temperature
Semicond. (Unit 1)	none
DC Link	7.46mF
Semicond. (Unit 2)	IGBT 4x FF300R17KE3
Driver signals IGBT	optical HFBR-15X1 / HFBR-25X1
Standards	EN50178, UL94, prepared for UL508C
Sales - name	2PS12017E34W33908
Internal ID	33908
Mechanical drawing number	33908_MB
Electrical drawing number	2PS-C4-V-IO
Weight	30 kg



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Notes

Heat sink with aluminum cooling channel.
Composites of fluid: Water and 52 vol. % Antifrogen N.
The typical water flow rate is 11 dm³/min.
Test pressure 10 bar, operating pressure is maximally 70 percent of test pressure.
The Inverter current is limited by the dc link capacitor.
Examine the capacitor current in your application!

Electrical data

DC Link			min	typ	max	units
Voltage		V _{DC}		1100	1200	V
Overvoltage shutdown	within 5000µs			1300		V

Unit 2 AC			min	typ	max	units
Voltage	depending on controller	V _{Unit2}		690		V _{RMS}
Continuous current	V _{Unit2} = 715V _{RMS} , V _{DC} = 1100V, T _{inlet} = 50°C, T _J ≤ 125°C, f _{Unit2} = 50Hz, f _{sw2} = 2000Hz, cos(phi) = 1,00	I _{Unit2}			824	A _{RMS}
Continuous current overload cap.	T _{inlet} = 50°C, for overload capability 150% for 60s			549		A _{RMS}
Short time current	T _{inlet} = 50°C, 10s, every 180s, initial load = 659A _{RMS}	I _{Unit2}			824	A _{RMS}
DC current	no rotating field, T _{inlet} = 50°C	I _{Unit2 DC}			354,0	A _{av}
Overcurrent shutdown	within 15µs			2500		A _{peak}
Switching frequency		f _{sw2}			6000	Hz
Power losses	V _{Unit2} = 715V, V _{DC} = 1100V, T _{inlet} = 50°C, T _J ≤ 125°C, f _{Unit2} = 50Hz, f _{sw2} = 2000Hz, cos(phi) = 1,00, I _{Unit2} = 824A _{RMS}	P _{loss2}		3280		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}		690		V _{RMS}
Insulation test voltage	according to EN50178, f = 50Hz, t = 60s	V _{isol}		2,5		kV _{RMS}

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Important component data

			min	typ	max	units
DC Link capacitor		C_{DC}		7,46		mF
		type	Electrolytic Capacitor			
Temperature range			-40		+85	°C
Rated voltage	per device	U_R	450			V _{DC}
Rated capacitance	per device	C_R	5600			μF
Capacitance tolerance	per device	Tol	-20		+20	%
Maximum ripple current	per device, $T_{amb} = 40^{\circ}\text{C}$, $f = 120\text{Hz}$	I_{Rmax}			44	A _{RMS}
wiring system	series, parallel		3s, 4p			
Balance or discharge resistors	per DC Link unit	R_b	16,5			kΩ

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 10,0kΩ, 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		30,0	V
Analog current outputs Unit 2	load max 1mA; at 824A	$V_{ana\ out}$	3,31	3,38	3,45	V
Analog DC Link voltage output	load max 1mA; at 1200V	$V_{DC\ out}$	8,07	8,23	8,39	V
Analog temperature output	load max 1mA; at $T_{NTC} = 56^{\circ}\text{C}$ correspond to $T_j = 120^{\circ}\text{C}$	$V_{T\ out}$	8,95	9,13	9,31	V
Overttemperature shutdown	at $T_{NTC} = 57^{\circ}\text{C}$ correspond to $T_j = 125^{\circ}\text{C}$	$V_{T\ out\ OT}$		10		V
Optical input power				12		μW
Optical output power					60	μW

Heat sink water cooled / Thermal data

			min	typ	max	units
Water flow	according cooling water specification from infineon	$\Delta V/\Delta t_{Water}$	10			dm³/min
Water pressure drop		Δp_{Water}		50		mbar
Water pressure					8	bar
Cooling water inlet temperature		T_{inlet}	-40		40	°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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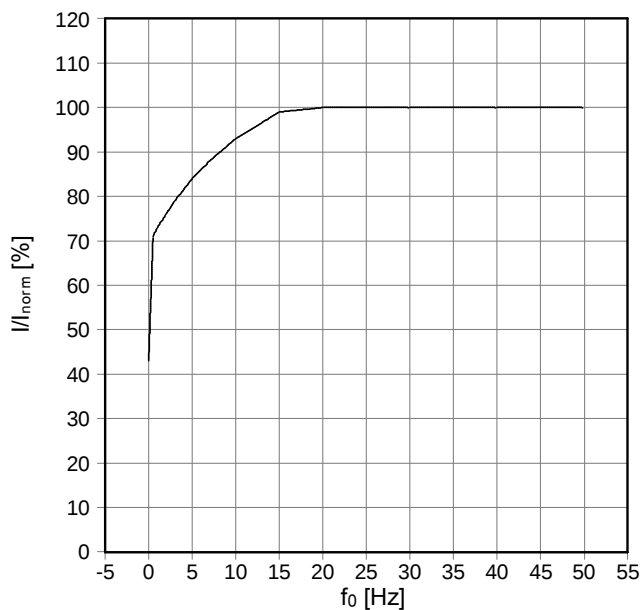
Environmental conditions

			min	typ	max	units
Storage temperature		T _{stor}	-40		85	°C
Ambient temperature	minimum 0°C for optional optical interface	T _{amb}	-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		264	400	450	mm
Weight with heat sink	approximation			30,0		kg

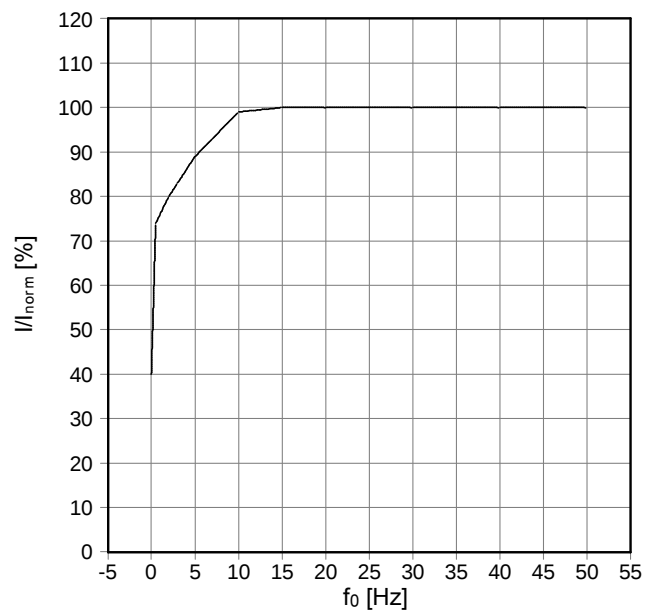
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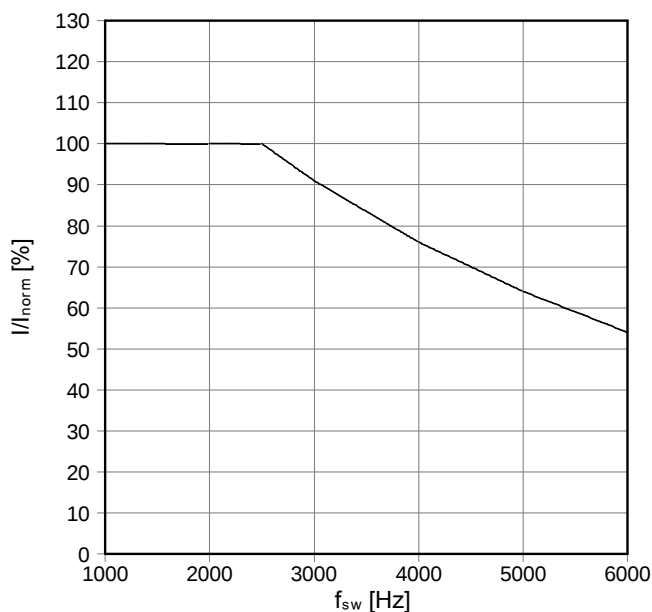
fo - derating curve IGBT (motor)
 $\cos(\phi) = 1$
 $T_{cool\ medium} = 50^{\circ}C$; 100% = 824 A rms



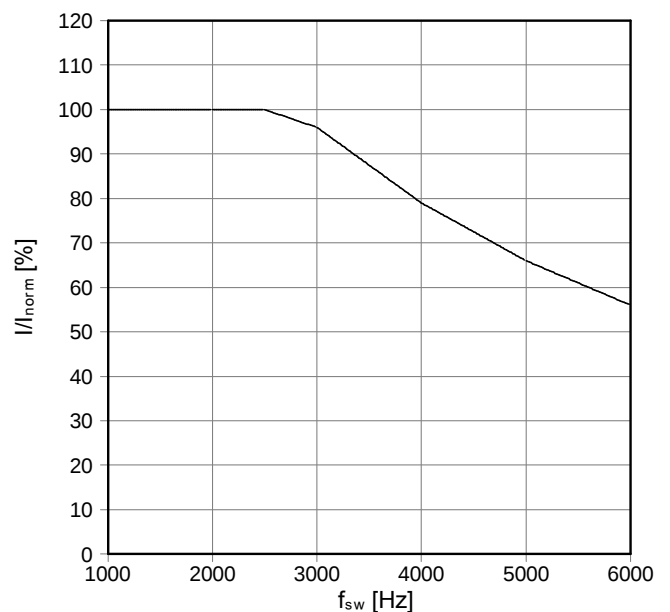
fo - derating curves Diode (generator)
 $\cos(\phi) = -1$
 $T_{cool\ medium} = 50^{\circ}C$; 100% = 824 A rms



fsw - derating curve IGBT (motor)
 $\cos(\phi) = 1$
 $T_{cool\ medium} = 50^{\circ}C$; 100% = 824 A rms

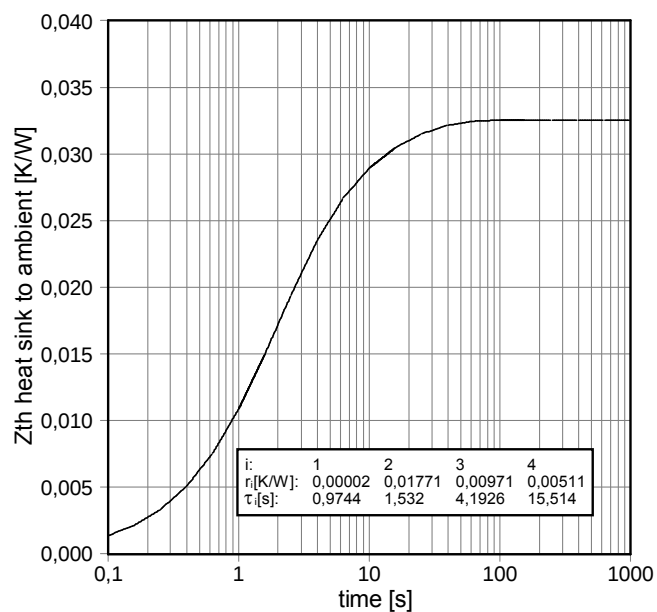


fsw - derating curve Diode (generator)
 $\cos(\phi) = -1$
 $T_{cool\ medium} = 50^{\circ}C$; 100% = 824 A rms



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Transient thermal impedance per module
 $T_{\text{cool medium}} = 50^{\circ}\text{C}$



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Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.

Should you intend to use the Product in aviation applications, in health or life endangering or life support applications, please notify. Please note, that for any such applications we urgently recommend

- to perform joint Risk and Quality Assessments;
- 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.

If and to the extent necessary, please forward equivalent notices to your customers.

Changes of this product data sheet are reserved.

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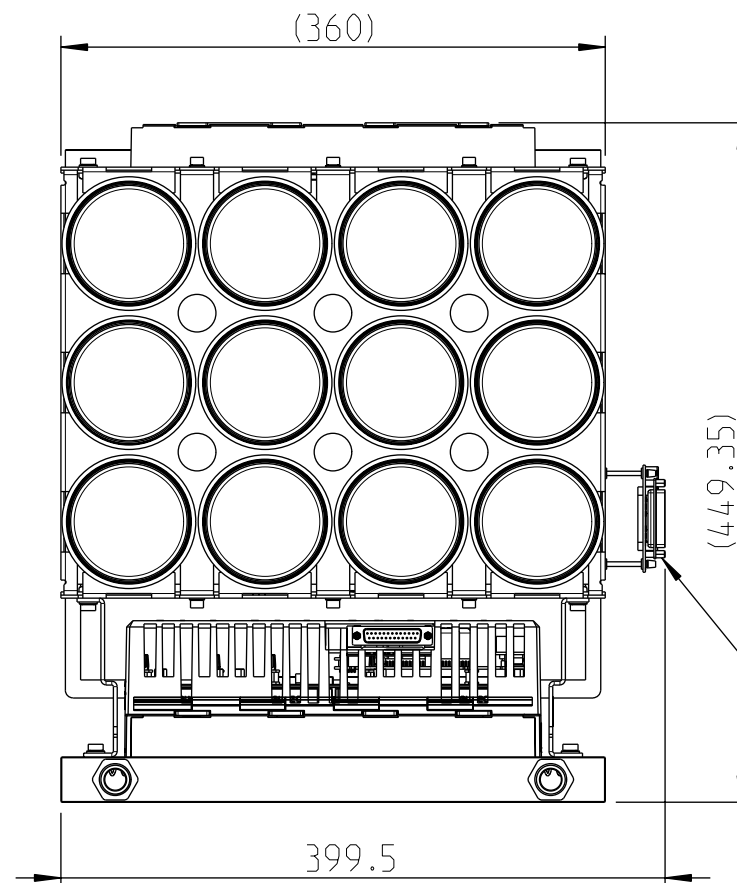
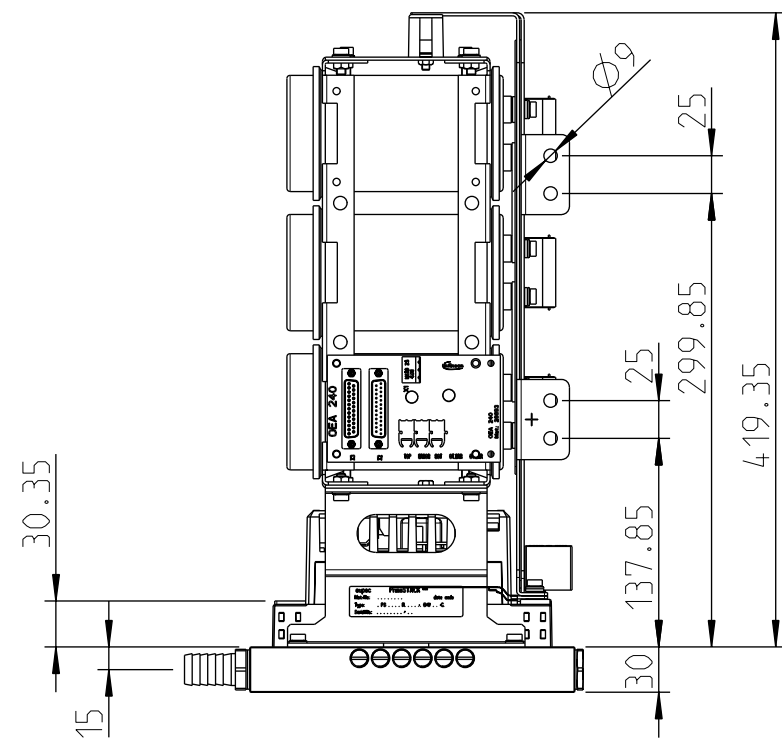
Sicherheitshinweise

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.

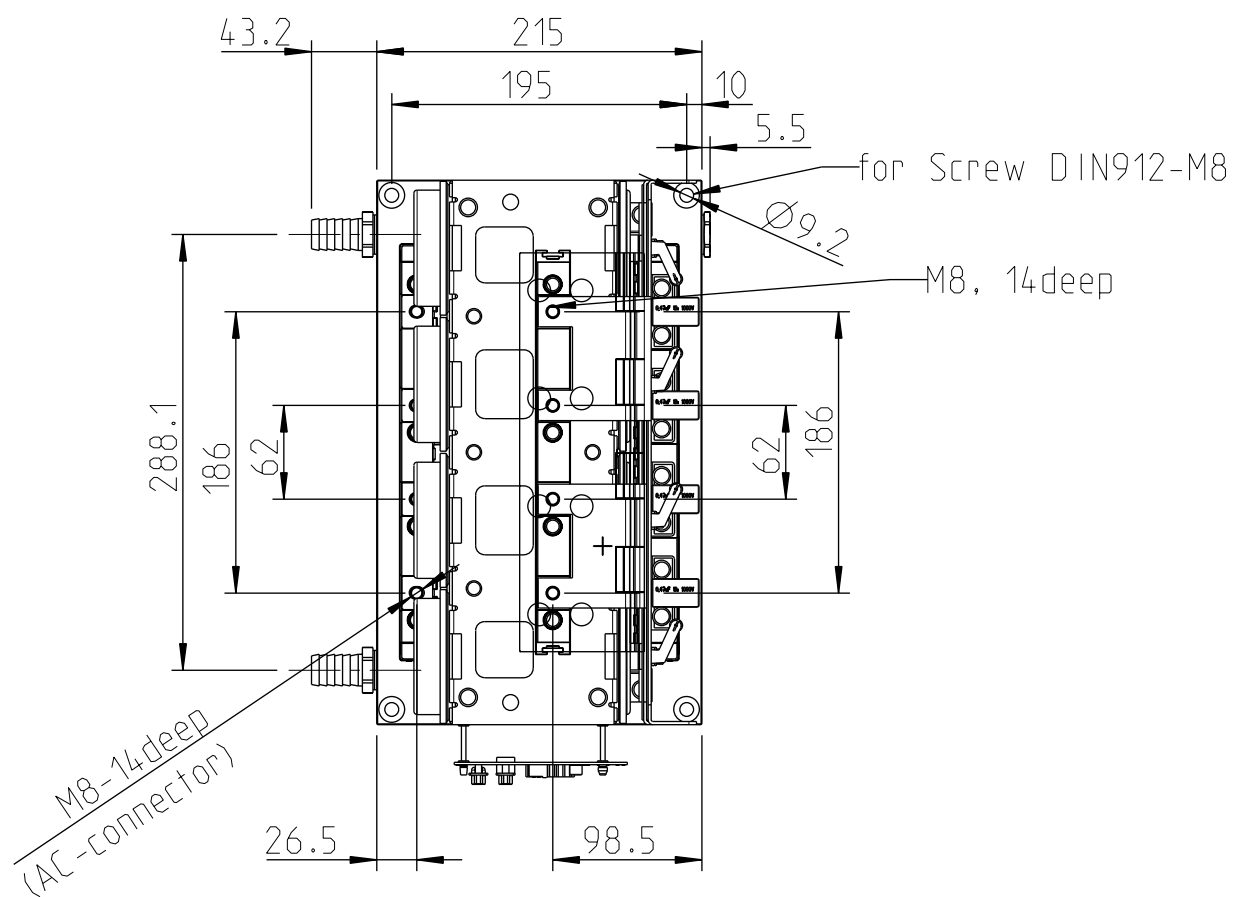
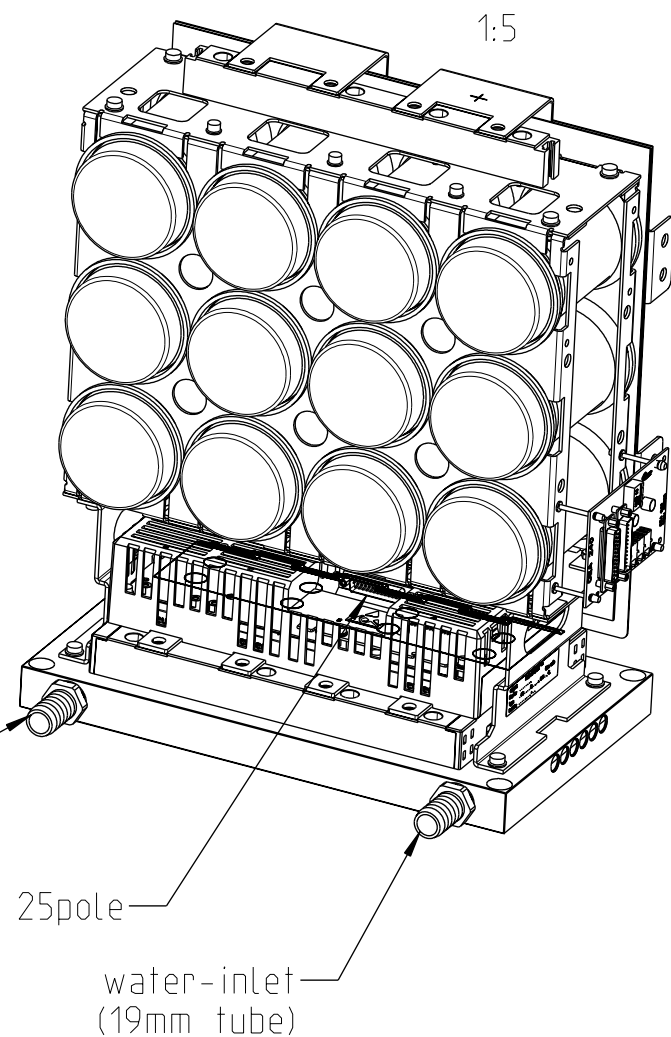
Safety Instructions

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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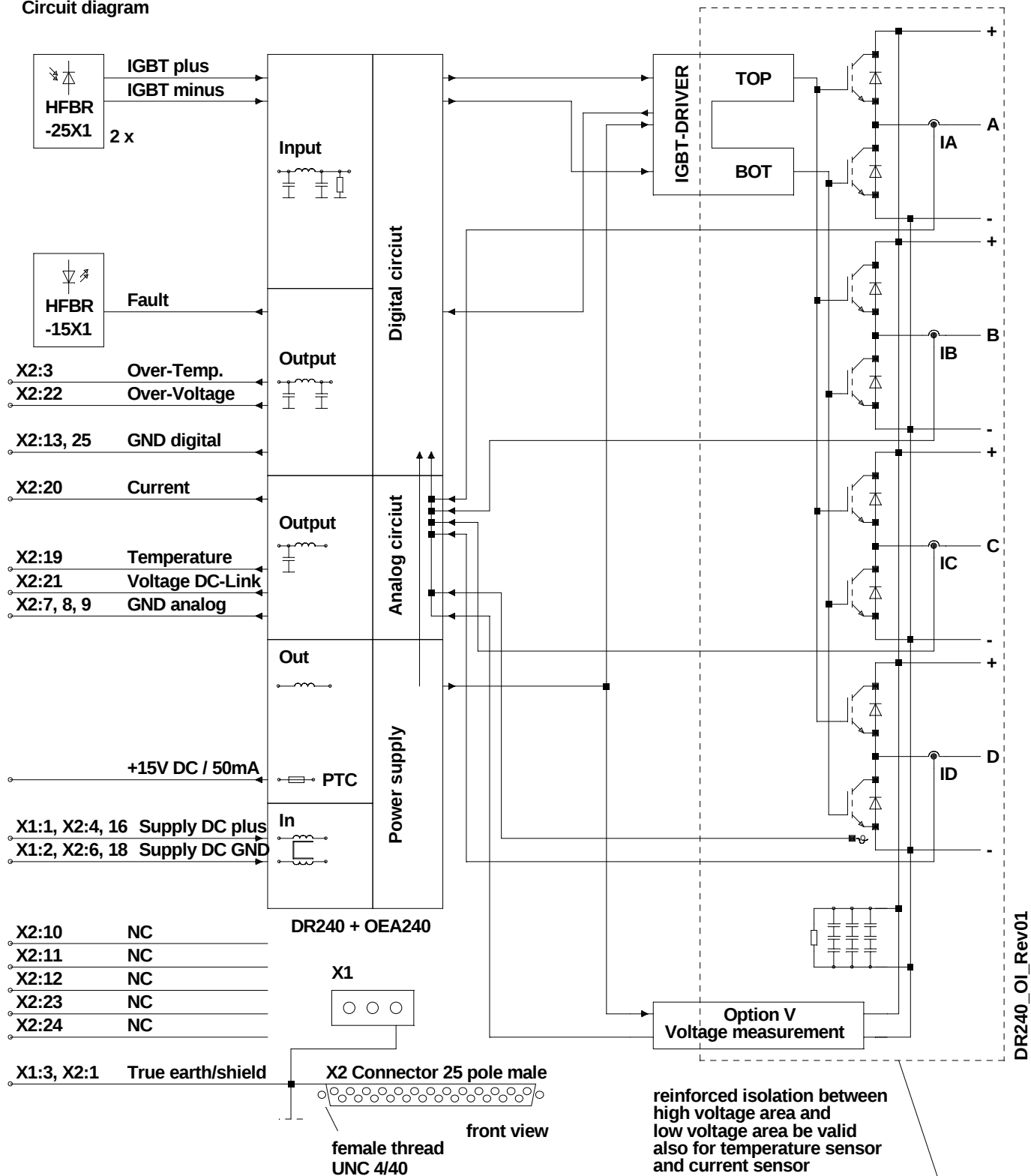


OE A
(optional)



Part-No. 33908				general Tolerance		Surface		Scale 1:5		
Assembly-No.						Material				
						Material-No.				
					Date	Name			Description PrimeSTACK+Capacitors 2PS....-4WH-C..VT10	
				Agent	15.07.09	Papenfort				
				Checked	15.07.09	gez.Bohl.				
				Norm						
							Graph-No.		Version	Sheet
							33908 Mb		0	
Vers.	Revision	Date	Name	Origin			Constructed for			A3

Circuit diagram



Error Table DR240 + OEA240	Error outputs (open collector)		
	Error optical	Temp. Pin 3	Voltage Pin 22
Error Driver Core	X		
Overcurrent	X		
Overtemperature output stage	X	X	
Overtemperature PCB		X	
Overvoltage DC-Link (Option)	X		X
Undervoltage power supply	X		X

X = high level with required external pull up resistor respectively light off

For detailed technical information please refer the PrimeSTACK manual.