Technical Information

PrimeSTACK

6PS12017E4FG35151

Vorläufige Daten
preliminary data

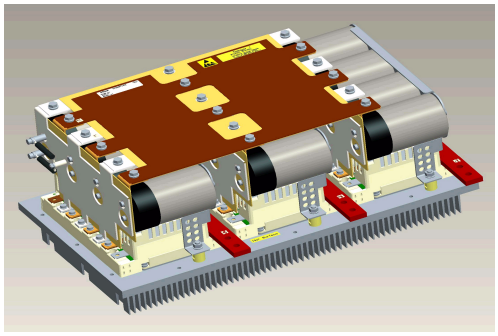
Key data

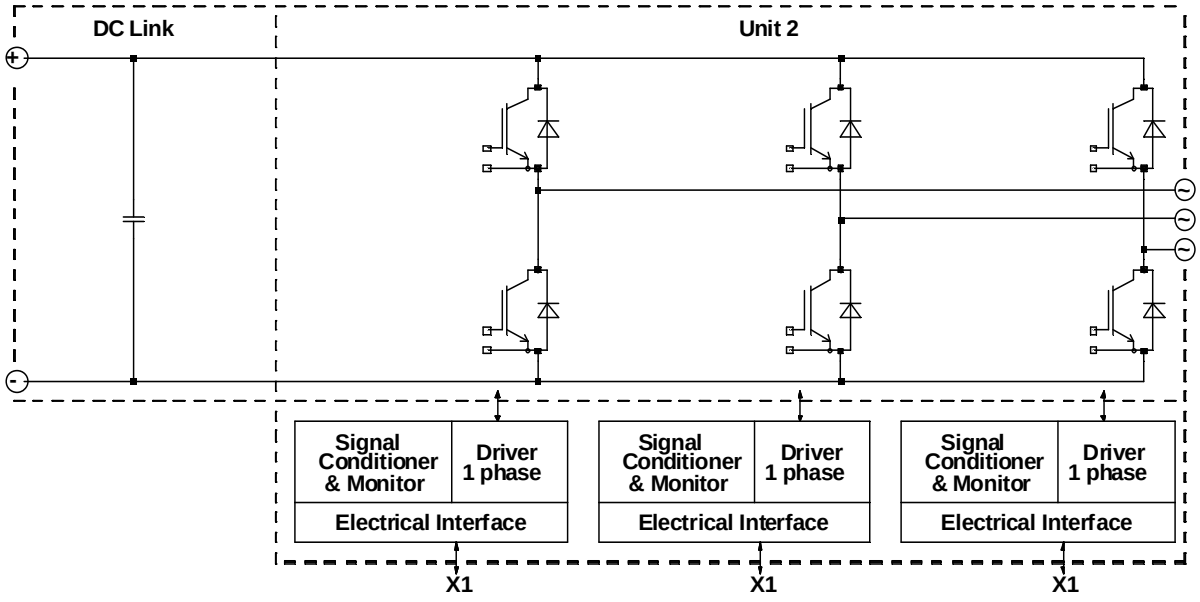
3x 591A rms at 690V rms, forced air (fan not implemented)

General information

Stack for various inverter applications. IGBTs, heat sink, 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 controllers functionality.

Topology		B6I
Application / Modulation		Inverter / Sine
Load type		resistive, inductive
Cooling		forced air (fan not implemented)
Implemented sensors		current, temperature
Semicond. (Unit 1)		none
DC Link		4.8mF
Semicond. (Unit 2)	IGBT	12x FF300R17KE4
Driver signals IGBT		electrical CMOS 0 .. 15V
Standards		EN50178, UL94, prepared for UL508C
Sales - name		6PS12017E4FG35151
Internal ID		35151
Mechanical drawing number		35151_MB
Electrical drawing number		2PS-CF-V





prepared by: Otmar Wette	date of publication: 2011-12-05
approved by: Sören Dreifke	revision: 2.2

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Notes
-Rated DC voltage =1100 V
-for higher voltages refer to capacitor specification EN 61701

Electrical data

DC Link				min	typ	max	units
Voltage			V_{DC}		1100	1250	V

Unit 2 AC				min	typ	max	units
Voltage	depending on controller		V_{Unit2}		690		V_{RMS}
Continuous current	V_{Unit2} = 690V_{RMS}, V_{DC} = 1100V, T_{inlet} = 40°C, $T_J \leq$ 125°C, f_{Unit2} = 50Hz, f_{sw2} = 2000Hz, cos(phi) = 0,85		I_{Unit2}			591	A_{RMS}
Continuous current overload cap.	T_{inlet} = 40°C, for overload capability 150% for 60s				432		A_{RMS}
DC current	no rotating field, T_{inlet} = 40°C		$I_{Unit2\ DC}$			300,0	A_{av}
Overcurrent shutdown	within 15µs				2250		A_{peak}
Switching frequency			f_{sw2}			7000	Hz
Power losses	V_{Unit2} = 690V, V_{DC} = 1100V, T_{inlet} = 40°C, $T_J \leq$ 125°C, f_{Unit2} = 50Hz, f_{sw2} = 2000Hz, cos(phi) = 0,85, I_{Unit2} = 591A_{RMS}		P_{loss2}		6240		W
Power factor			$cos(phi)_{Unit2}$	-1,00		1,00	

General data				min	typ	max	units
Power losses (PCB)			$P_{loss\ aux}$			120	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}		4,80		mF
		type		Foil		
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} = 55°C	I_{Rmax}			45	A_{RMS}
wiring system	**s**eries, **p**arallel			1s, 12p		

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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}		120		W
Driver and interface board	see separate technical information			3 x DR240		
Driver core				EiceDRIVER 2ED300C17-ST		
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 5mA; at 591A	$V_{ana\ out}$	2,64	2,69	2,74	V
Analog temperature output	load max 5mA; at T_{NTC} = 78°C correspond to T_j = 125°C	$V_{T\ out}$	9,13	9,32	9,51	V
Overtemperature shutdown	at T_{NTC} = 82°C correspond to T_j = 135°C	$V_{T\ out\ OT}$		10,23		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	$\Delta V/\Delta t_{Air}$	1500			m³/h
Air pressure drop		Δp_{Air}		190		Pa
Cooling air inlet temperature	heat sink temperature > -25°C	T_{inlet}	-25		55	°C

Environmental conditions

			min	typ	max	units
Storage temperature		T_{stor}	-40		80	°C
Ambient temperature		T_{amb}	-25		55	°C
Operating temperature	see chapter Heat sink air cooled / Thermal data					
Cooling air velocity (PCB)		$V_{Air\ PCB}$	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/s²
Shock	according to IEC60721				40	m/s²
Protection degree				IP00		
Pollution degree				2		
Torque at DC Terminals		M_{DC}	15,0		17,0	Nm
Torque at AC Terminals		M_{AC}	16,0		20,0	Nm
Dimensions	width × depth × height		645	438	299	mm
Weight with heat sink	approximation			52,0		kg

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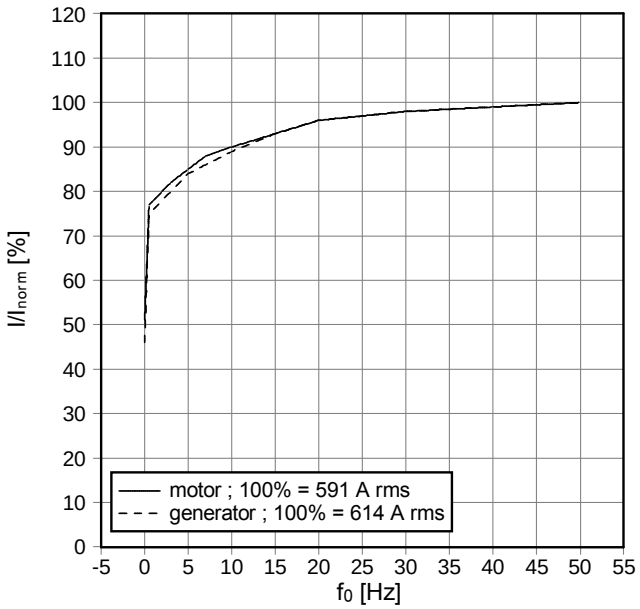
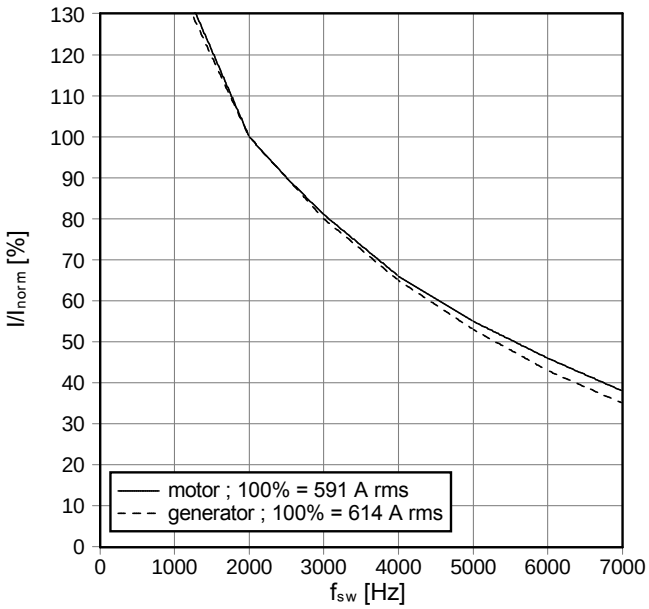
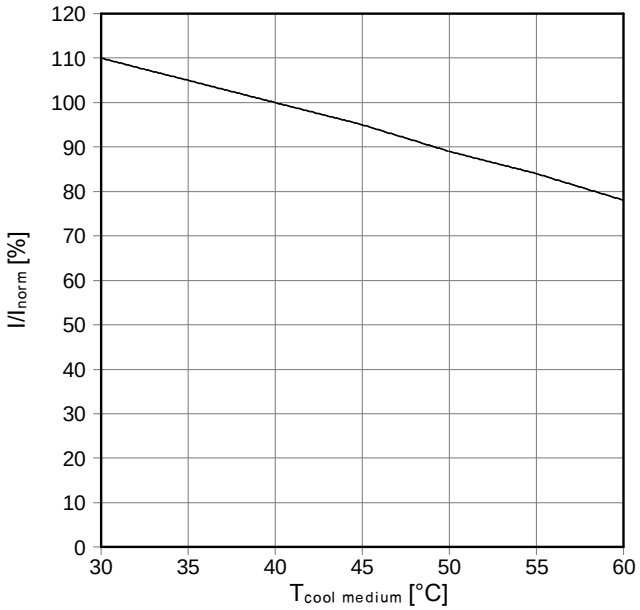
fo - derating curve IGBT (motor), Diode (generator)
cos(phi) = ± 0,85
$T_{cool\ medium}$ = 40°C



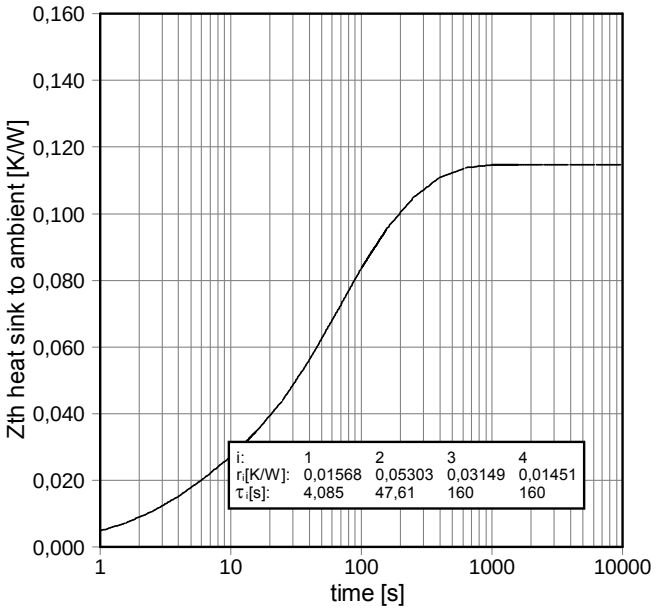
fsw - derating curve IGBT (motor), Diode (generator)
cos(phi) = ± 0,85
$T_{cool\ medium}$ = 40°C



Continuous current derating curves vs Tcool medium
IGBT, cos(phi) = 0,85



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



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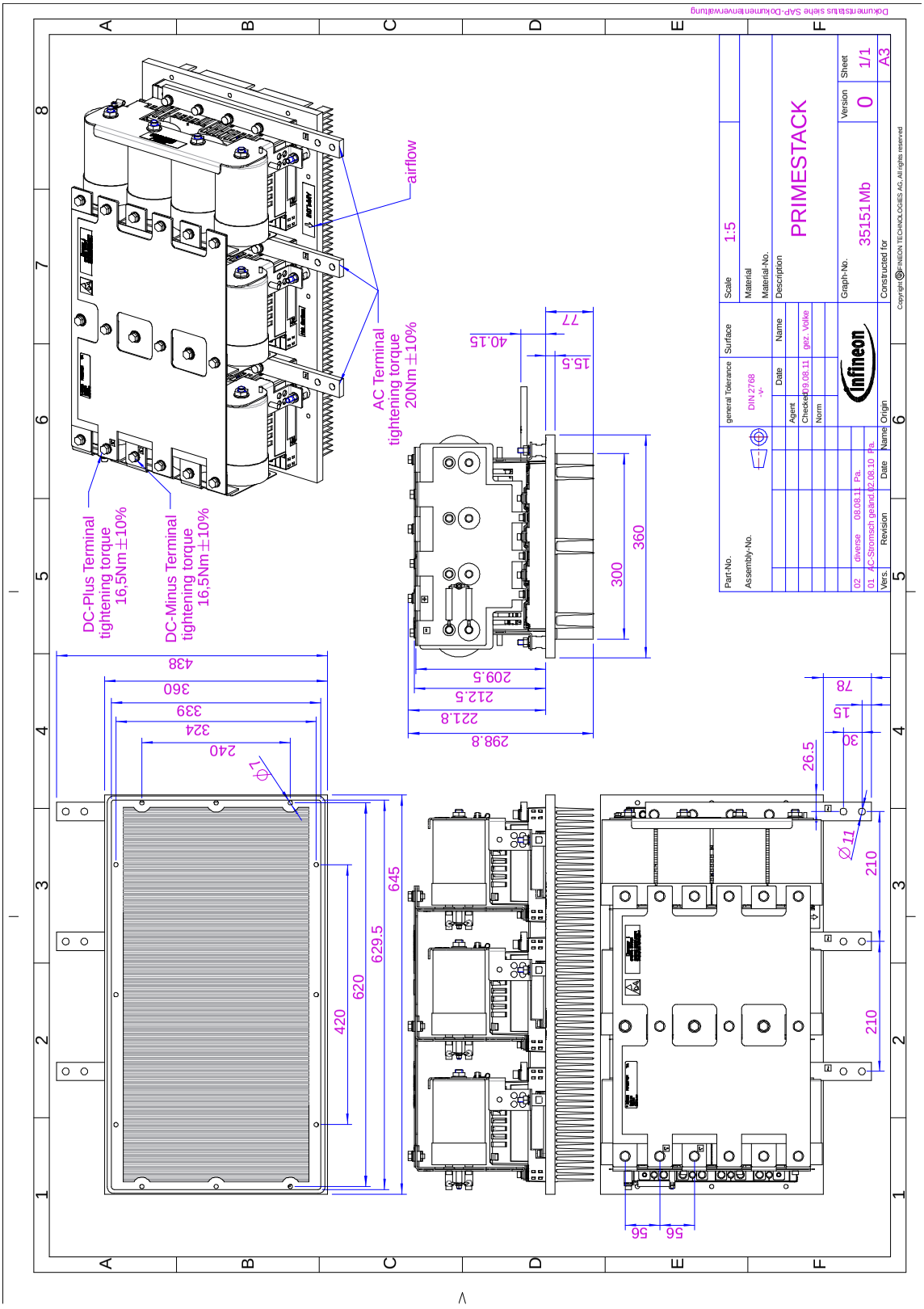
Mechanical drawing



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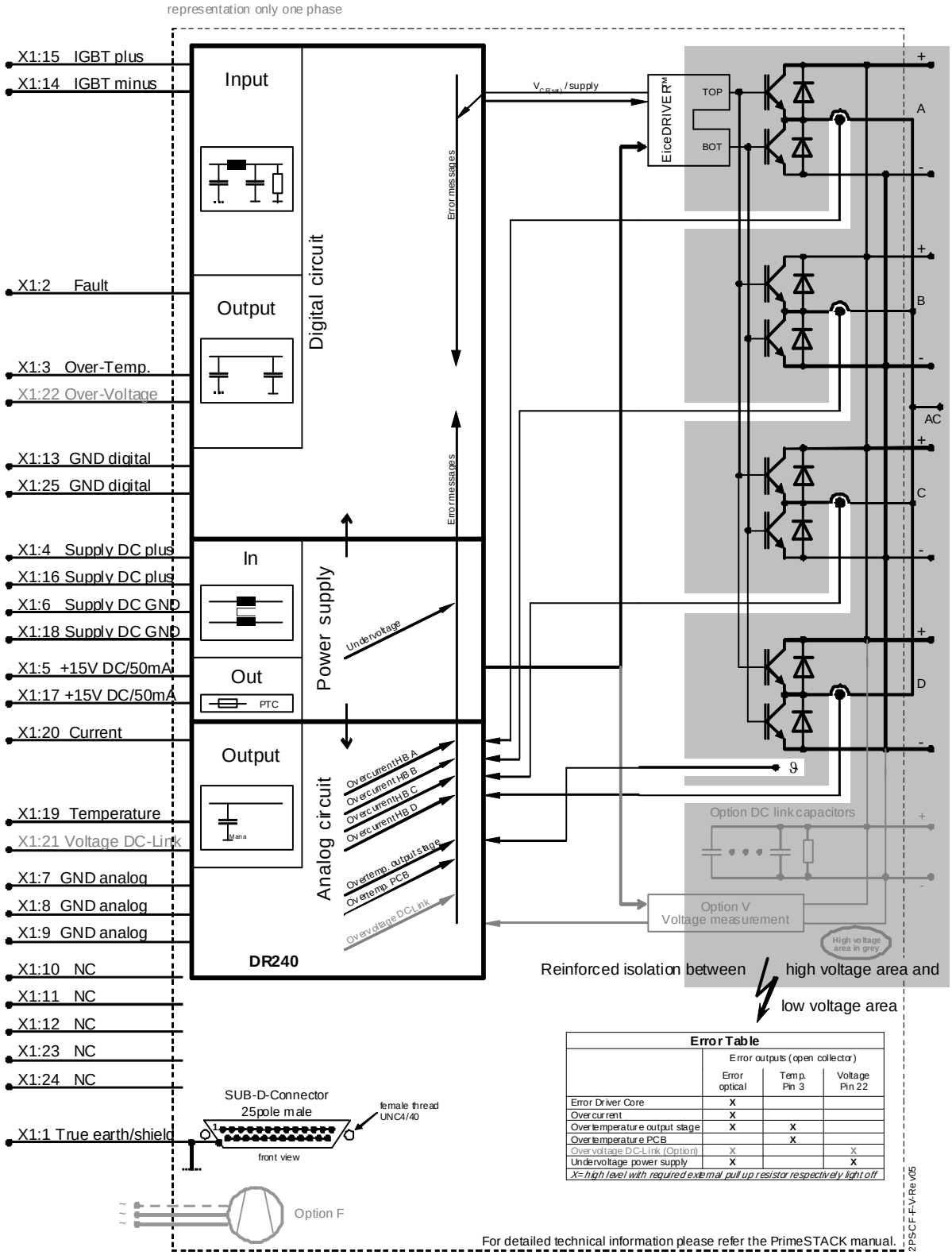
Circuit diagram



Error Table

	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.

2PSCF-F-V-Rev05

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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.

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