

Technical Information

PrimeSTACK

4PS0300R12KS4-3GV



Vorläufige Daten
preliminary data

Key data

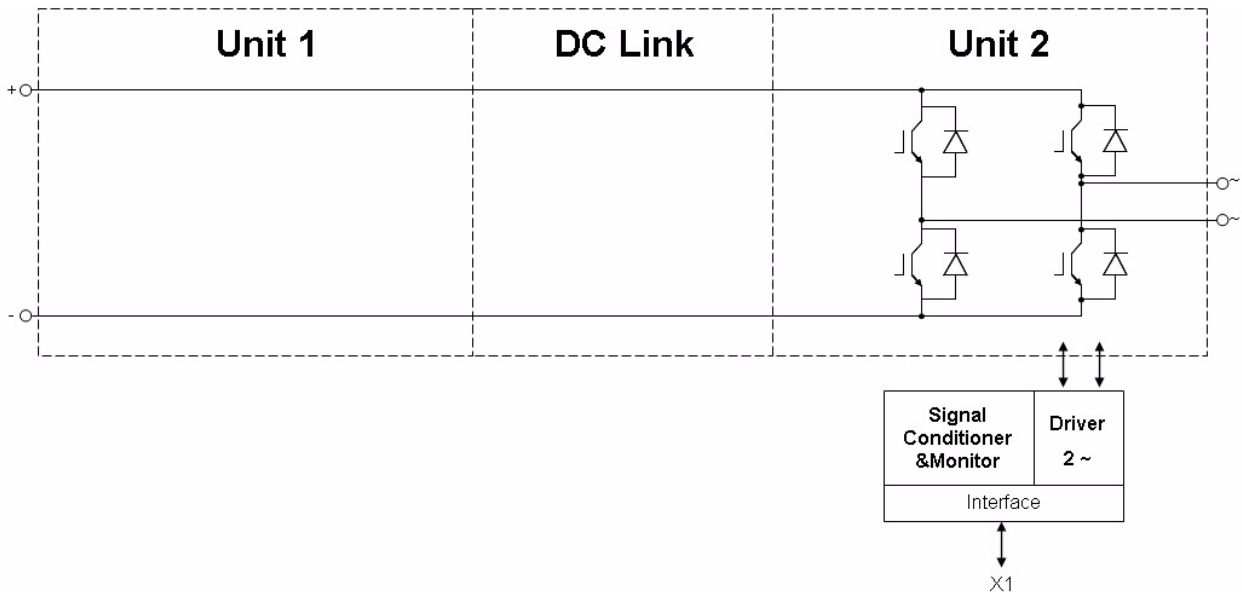
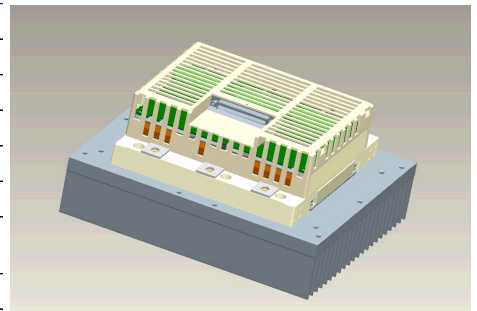
2x 183A AC at 400V AC, forced air (fan not implemented)

General information for:

Stacks for various inverter application. Semiconductors, heat sinks, 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	B2I
Application / Modulation	Inverter / Sine
Load type	resistive, inductive
Cooling	forced air (fan not implemented)
Market	common industrial, drives, power supply
Monitors	current, voltage, temperature
Semicond. (Unit 1)	none
DC Link	none
Semicond. (Unit 2)	2x FF300R12KS4
Interface IGBT	electrical CMOS
Standards	EN50178, UL94, prepared for UL508C
Product ID (eupec)	30699
Mechanical drawing number	38000030
Electrical drawing number	4PS-C3-V



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Notes

Ovoltage shutdown:
It must be realized by the customer.
Ovoltage and Overcurrent shutdown reaction time:
This parameter refers to the customers controller.

Electrical data

DC Link		min	typ	max	units
Voltage	V _{DC}		650	850	V

Unit 2 AC		min	typ	max	units
Voltage	#ignore#	V _{Unit2}	400		V _{RMS}
Continuous current	V _{Unit2} = 400V _{RMS} , V _{DC} = 650V, T _{inlet} = 40°C, T _J ≤ 125°C, f _{Unit2} = 50Hz, f _{sw2} = 5000Hz, cos(phi) = 0,85	I _{Unit2}		183	A _{RMS}
Continuous current overload cap.	T _{inlet} = 40°C, for overload capability 150% for 60s		130		A _{RMS}
Short time current	T _{inlet} = 40°C, 10s, every 180s, initial load = 160A _{RMS}	I _{Unit2}		200	A _{RMS}
Overcurrent shutdown	within 15µs		460		A _{peak}
Switching frequency		f _{sw2}		20000	Hz
Power losses	V _{Unit2} = 400V, V _{DC} = 650V, T _{inlet} = 40°C, T _J ≤ 125°C, f _{Unit2} = 50Hz, f _{sw2} = 5000Hz, cos(phi) = 0,85, I _{Unit2} = 183A _{RMS}	P _{loss2}	1325		W
Power factor		cos(phi) _{Unit2}	-1,00	1,00	

General data		min	typ	max	units
Power losses (PCB)		P _{loss aux}		t.b.d.	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}	1,8		kV _{RMS}

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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		DR210			
Driver core			EiceDRIVER 2ED300C17-S			
Digital input level	resistor to GND 10,0k Ω , 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 183A	$V_{ana\ out}$	3,88	3,96	4,04	V
Analog DC Link voltage output	load max 1mA; at 850V	$V_{DC\ out}$	8,33	8,50	8,67	V
Analog temperature output	load max 1mA; at $T_{NTC} = 71^{\circ}C$ correspond to $T_j = 125^{\circ}C$	$V_{T\ out}$	7,61	7,77	7,93	V
Overvoltage shutdown reaction time	after overvoltage message by PrimeSTACK interface				50	μs
Overcurrent shutdown reaction time	after overvoltage message by PrimeSTACK interface				10	μs

Heat sink air cooled / Thermal data

			min	typ	max	units
Airflow	$T_{Air} = 20^{\circ}C$, $P_{air} = 1013hPa$, dry- and dust free, measured on side of heat sink. according to DIN 41882	$\Delta V / \Delta t_{Air}$	500			m^3/h
Air pressure drop		Δp_{Air}		150		Pa
Cooling air inlet temperature	heat sink temperature $> -25^{\circ}C$	T_{inlet}	-25		40	$^{\circ}C$

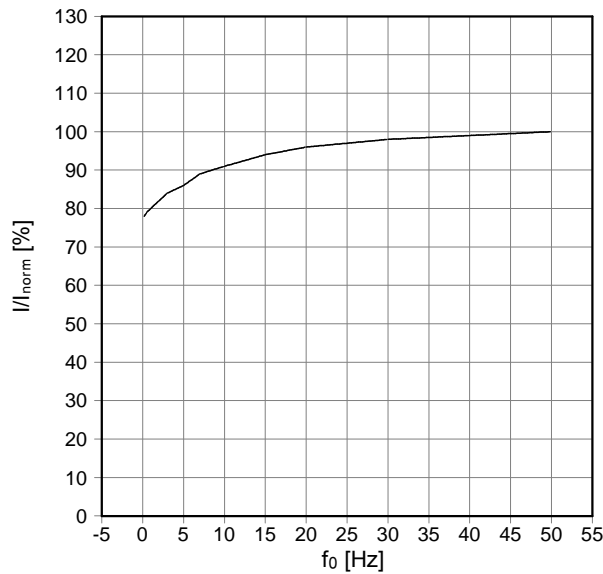
Environmental conditions

			min	typ	max	units
Storage temperature		T_{stor}	-40		85	$^{\circ}C$
Ambient temperature (PCB)		T_{amp}	-25		55	$^{\circ}C$
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/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 \times depth \times height		216	280	167	mm
Weight with heat sink	approximation			9,1		kg
Weight without heat sink	approximation			2,9		kg

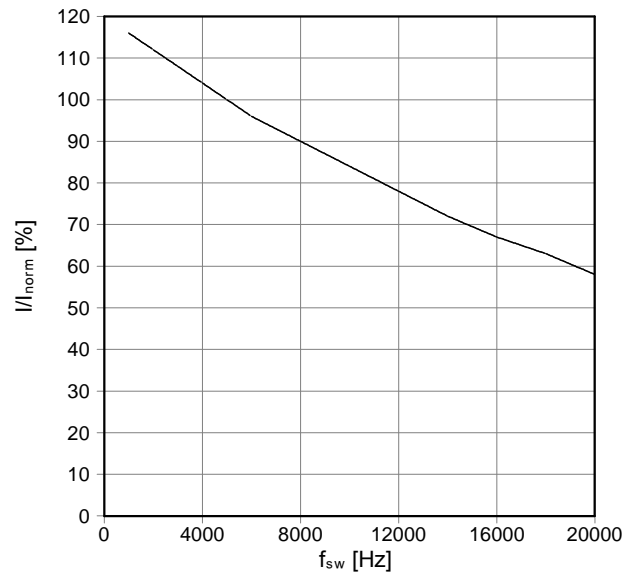
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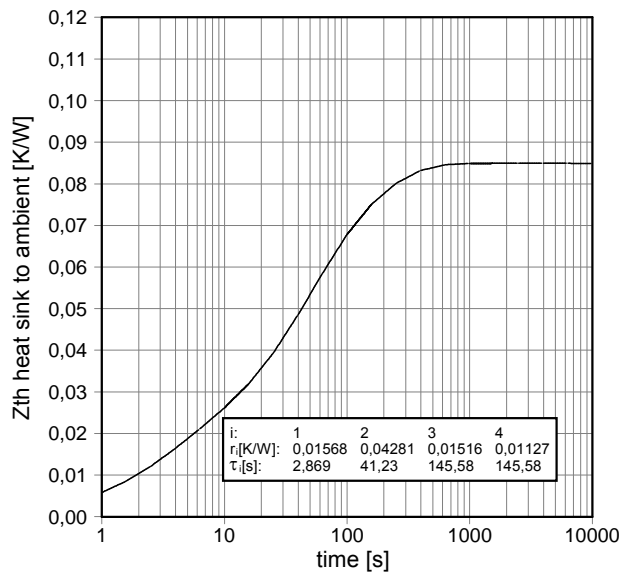
fo - derating curve IGBT (motor)
cos(phi) = 0,85
T_{cool medium} = 40°C



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

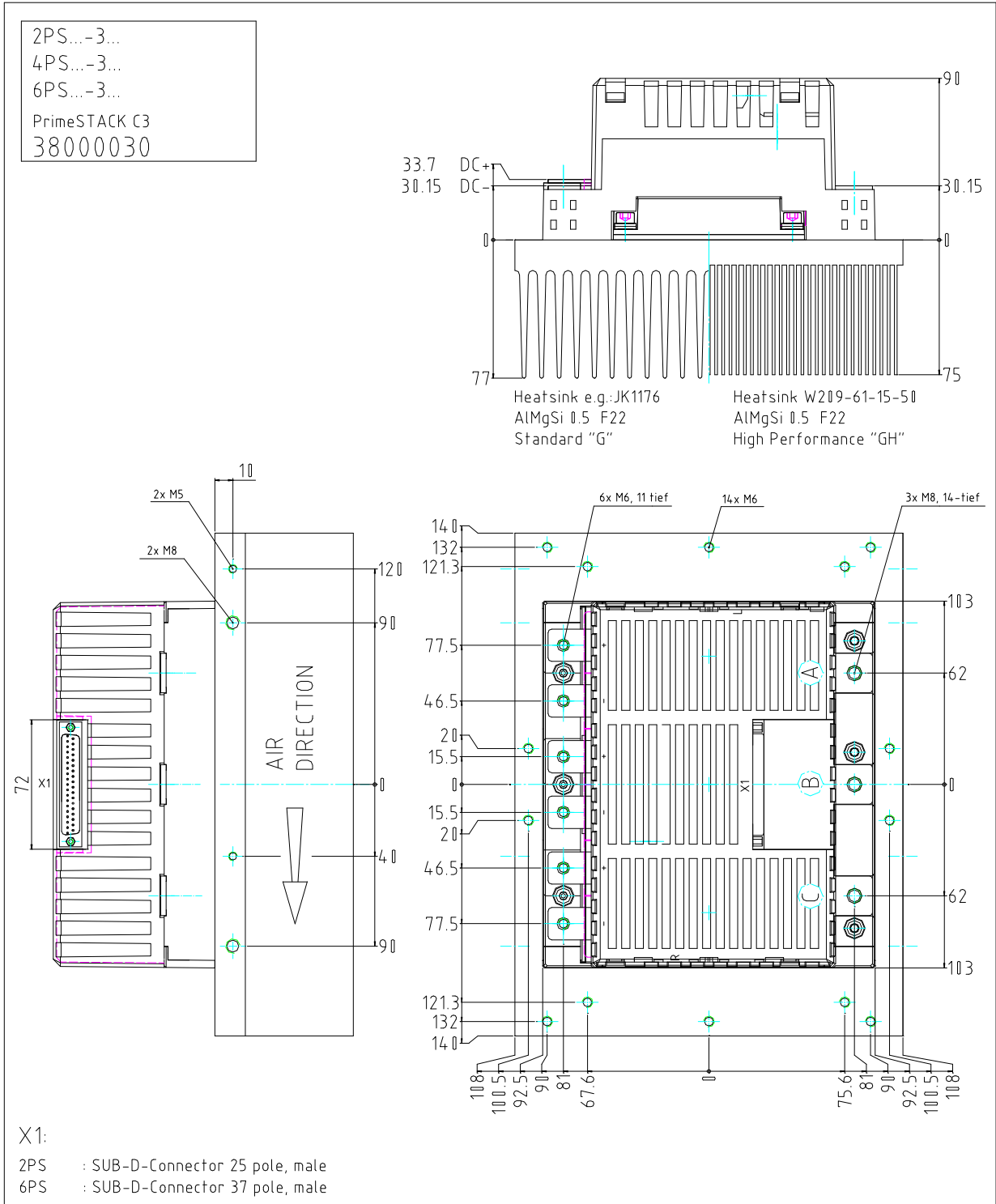


Transient thermal impedance per module
T_{cool medium} = 40°C



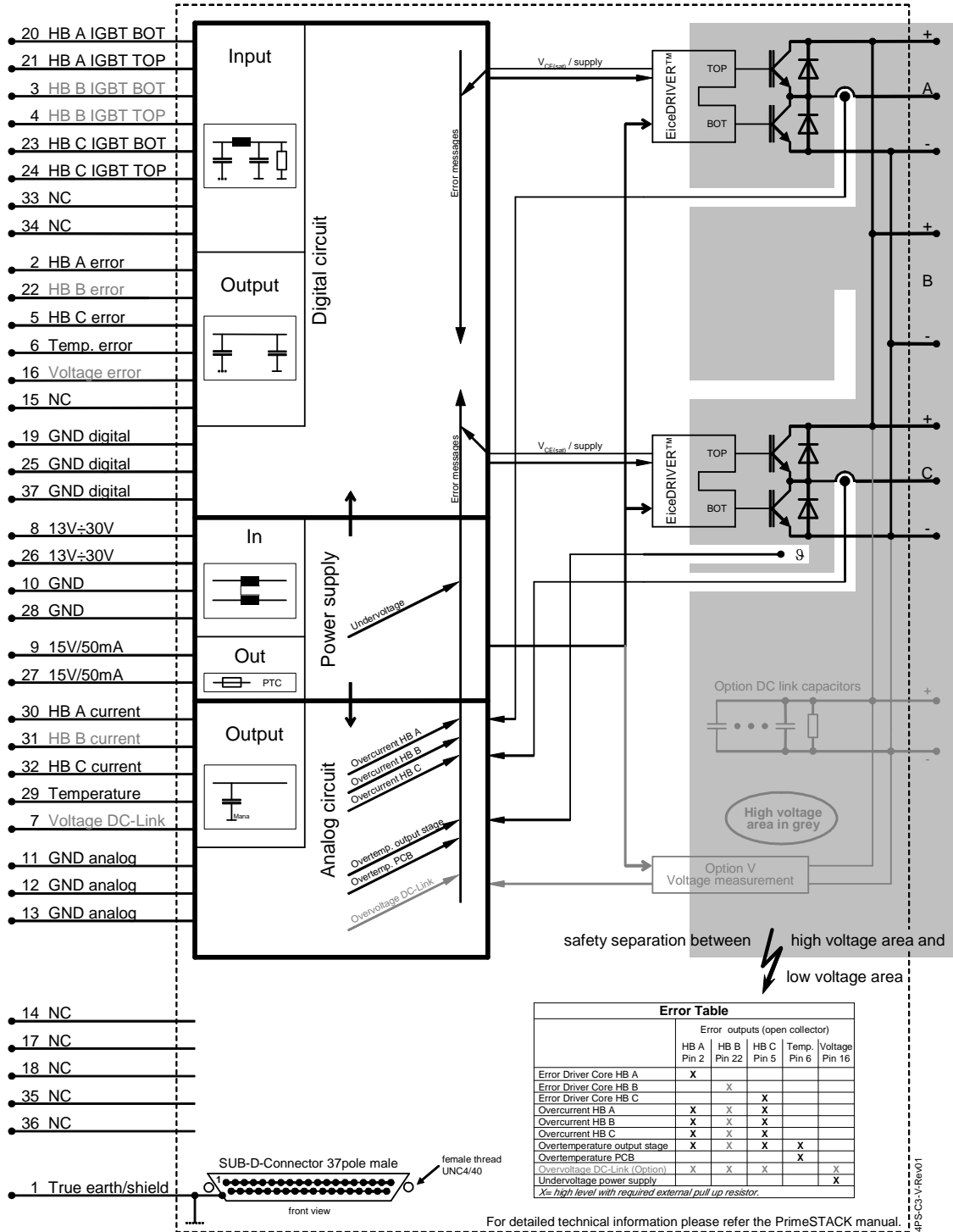
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Mechanical drawing

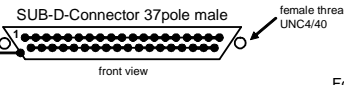


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Circuit diagram



- 14 NC
- 17 NC
- 18 NC
- 35 NC
- 36 NC



	Error outputs (open collector)				
	HB A Pin 2	HB B Pin 22	HB C Pin 5	Temp. Pin 6	Voltage Pin 16
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	X	X	X	
Overtemperature PCB				X	
Overvoltage DC-Link (Option)	X	X	X		X
Undervoltage power supply					X

X= high level with required external pull up resistor.

For detailed technical information please refer the PrimeSTACK manual.

4PES3-VRev01

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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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