4. INPUT

General Condition: T_A = 0… 50 °C unless otherwise noted.

PARAMETER		DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Vi start	Minimum operating input voltage	Stand-by output available, DSP running	-30			VDC
Vi nom	Nominal input voltage			-54		VDC
Vi	Input voltage	Normal operation (from Vi min to Vi max)	-40		-72	VDC
Ii	Input current	Vi > Vi min			25	A
Ii pk	Inrush current limitation	From Vi min to Vi max, T_A = 25°C, turn on			50	A
Vi on	Turn-on standby input voltage	Ramping up	-30			VDC
Vi on	Turn-on input voltage	Ramping up	-39		-43	VDC
Vi off	Turn-off input voltage	Ramping down	-37		-41	VDC
η	Efficiency	Vi = -48 VDC; -54 VDC; -60 VDC; 20% load		90		%
		Vi = -48 VDC; -54 VDC; -60 VDC; 50% load		94		%
		Vi = -48 VDC; -54 VDC; -60 VDC; 100% load		91		%
Thold_V1	Hold-up time V1	62 A on V1, 3 A on Vsb with 11000 µF Load capacitance, Vi = -48 VDC	1			ms
Thold_sb	Hold-up time Vsb	62 A on V1, 3 A on Vsb with 350 µF Load capacitance, Vi = -48 VDC	2			ms

4.1 INPUT FUSE

A fast-acting 30 A input fuse in the negative voltage path inside the power supply protect against severe defects. The fuses are not accessible from the outside and are therefore not serviceable parts.

4.2 INRUSH CURRENT

Internal bulk capacitors will be charged through resistors connected from bulk cap minus pin to the DC rail minus, thus limiting the inrush current. After the inrush phase, NTC resistors are then shorted with MOSFETs connected in parallel. The Inrush control is managed by the digital controller (DSP).

4.3 INPUT UNDER-VOLTAGE

If the value of input DC voltage stays below the input under voltage lockout threshold Vi on, the supply will be inhibited. Once the input voltage returns within the normal operating range, the supply will return to normal operation again.

4.4 EFFICIENCY

The power supply module efficiency curve is measured at -48VDC and with external fan power as below.

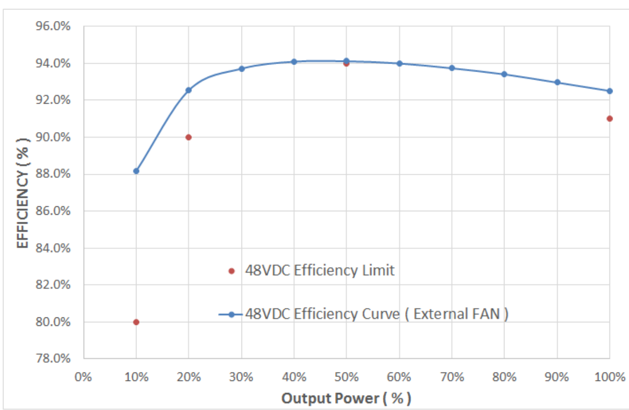

Figure 2. Efficiency Curve

5. OUTPUT

General Condition: T_A = 0…50 °C unless otherwise noted.

PARAMETER		DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Main Output V_1						
$V_{1\ nom}$	Nominal Output Voltage	$0.5 \cdot I_{1\ nom}$, T_A = 25°C		12.0		VDC
$V_{1\ set}$	Output Set Point Accuracy		-0.5		+0.5	$\%V_{1\ nom}$
$dV_{1\ tot}$	Total Static Regulation	$V_{i\ min}$ to $V_{i\ max}$, 0 to 100% $I_{1\ nom}$, T_A = 0 to 40°C	-5		+5	$\%V_{1\ nom}$
$P_{1\ nom}$	Nominal Output Power [1]	$V_{i\ min}$ to $V_{i\ max}$, T_A = 0 to 50°C		744		W
$I_{1\ nom}$	Output Current	$V_{i\ min}$ to $V_{i\ max}$,, T_A = 0 to 50°C		62		ADC
$V_{1\ pp}$	Output Ripple Voltage	$V_{i\ min}$ to $V_{i\ max}$, 0 to 100% $I_{1\ nom}$, 20Mhz Bandwidth			150	mVpp
$dV_{1\ load}$	Load Regulation	$V_{i\ nom}$, 0 to 100% $I_{1\ nom}$	-240		240	mV
$dV_{1\ line}$	Line Regulation	$V_{i\ min}$ to $V_{i\ max}$, $0.5 \cdot I_{1\ nom}$	-120		120	mV
$dV_{1\ temp}$	Thermal Drift	$V_{i\ nom\ HL}$, $0.5 \cdot I_{1\ nom}$			0.1	%/°C
$dI_{1\ share}$	Current Sharing	Deviation from $I_{1\ tot}$ / N, I_1 > 10%	-5		+5	ADC
V_{ISHARE}	Current Share Bus Voltage	$I_{1\ peak}$		8		VDC
$dV_{1\ lt}$	Load Transient Response	ΔI_1 = 50% $I_{1\ nom}$, I_1 = 10 … 100% $I_{1\ nom}$, C_{ext} = 0mF, dI_1/dt = 1A/µs, recovery within 1% of $V_{1\ nom}$	-0.6		0.6	VDC
t_{rec}	Recovery Time				2	ms
$t_{V1\ on\ delay}$	Delay Time from DC Applied	V1 in regulation Vi = 0V to $V_{i\ min}$, $V_{i\ nom}$, $V_{i\ max}$			2.5	sec
$t_{V1\ ovr\ sh}$	Output Turn-on Overshoot	$V_{i\ nom}$, 0 to 100% $I_{1\ nom}$			5	$\%V_{1\ nom}$
$dV_{1\ sense}$	Remote Sense	Compensation for cable drop, 0 to 100% $I_{1\ nom}$			0.25	V
$C_{V1\ load}$	Capacitive Loading				11000	µF
Standby Output V_{SB}						
$V_{SB\ nom}$	Nominal Output Voltage	I_{SB} =1.5 A (50% of I_{SBnom}), T_A = 25°C		5		VDC
$V_{SB\ set}$	Output Setpoint Accuracy		-0.5		+0.5	$\%V_{SBnom}$
$dV_{SB\ tot}$	Total Regulation	$V_{i\ min}$ to $V_{i\ max}$, 0 to 100% $I_{SB\ nom}$	-3		+3	$\%V_{SBnom}$
$P_{SB\ nom}$	Nominal Output Power	$V_{i\ min}$ to $V_{i\ max}$, T_A = 0 to 50°C		15		W
$I_{SB\ nom}$	Output Current	$V_{i\ min}$ to $V_{i\ max}$, T_A = 0 to 50°C			3	ADC
$dV_{sb\ load}$	Load Regulation	$V_{i\ nom}$, 0 to 100% $I_{sb\ nom}$	-75		75	mV
$dV_{sb\ line}$	Line Regulation	$V_{i\ min}$ to $V_{i\ max}$, $0.5 \cdot I_{sb\ nom}$	-25		25	mV
dV_{SB}	Droop	0 - 100 % $I_{SB\ nom}$		90		mV
$V_{SB\ pp}$	Output Ripple Voltage	$V_{i\ min}$ to $V_{i\ max}$, 0 to 100% $I_{SB\ nom}$, C_{ext} = 0Mf, 20 MHz bandwidth			100	mVpp
$dI_{SB\ share}$	Current Sharing	Deviation from $I_{SB\ tot}$ / N, I_{SB} = $0.5 \cdot I_{SB\ nom}$	-1		+1	ADC
$t_{VSB\ ovr\ sh}$	Output Turn-on Overshoot	$V_{i\ nom}$, 0 to 100% $I_{SB\ nom}$			5	%Vsb
dVSB	Load Transient Response	ΔI_{SB} = 50% $I_{SB\ nom}$, I_{SB} = 10… 100% $I_{SB\ nom}$, dI_{SB}/dt = 0.5 A/µs, recovery within regulation of $V_{SB\ nom}$	-3		+3	%Vsb
trec	Recovery Time				250	µs
$C_{VSB\ load}$	Capacitive Loading				350	µF

[1] See chapter *TEMPERATURE AND FAN CONTROL*