

POWER SUPPLY 1-PHASE, 48 V DC DIMENSION Q SERIES

QS40.481 POWER SUPPLY 48VDC 20A

- Output current of 20 A
- Up to 95% efficiency
- High short-circuit currents
- Maximum performance
- Remote Function



201

PRODUCT DESCRIPTION

Pulse Dimension Q is a series power supply with very high performance. The efficiency is high over a wide load range, which results in reduced power consumption and longer life regardless of load current. The average efficiency is 94.2% with a peak of 95%. The power loss at idle is only 12 W.

The bonus power provides 50% extra reserve with retained 48 V DC (30 A) which is an advantage when connected loads have high starting currents and to bridge temporary current peaks. The bonus power is limited to 4 seconds to avoid constant overloading of the power supply and wiring. In addition to the bonus effect leave the unit a very high short-circuit current (ms) that helps to secondary fuses. If the overload remains after 4 sec. Ports end in the so called, hiccup mode. When the output voltage drops below 40 V dc shut the unit by the end of the 18's. And then make a new start attempt. If the overload / short circuit persists, the unit output current of approx. 2 sec and then again turn off.

Heavy transient assure operation even at very störrik electrical environment and also has QS40.484 active inrush current protection, which means a very low starting current, even if the unit has been in operation for a longer time. Especially useful for redundant / parallel-connected systems.

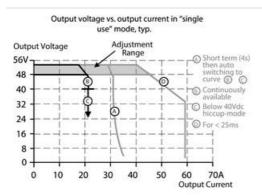
Simple diagnostics via DC-OK relay that falls on the output voltage deviates more than 10% from the set value, a green LED indicates DC-OK, Red LED indicates overload.

The unit can also be remote controlled for on/off function. Three different installation options available, see the "Technical data". Can be used instead of expensive DC contactors when you need to break up the 48 V side (NB. The remote control function has no safety circuit and therefore should not be used in the security context).

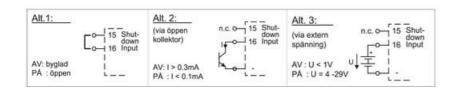
Active PFC reduces power consumption, harmonics close to zero and in addition, the power distribution in phases much smoother at power asymmetry.

We recommend free space of 40 mm over 20 mm below the unit, as well as 15 mm on the sides.

Output charcteristic

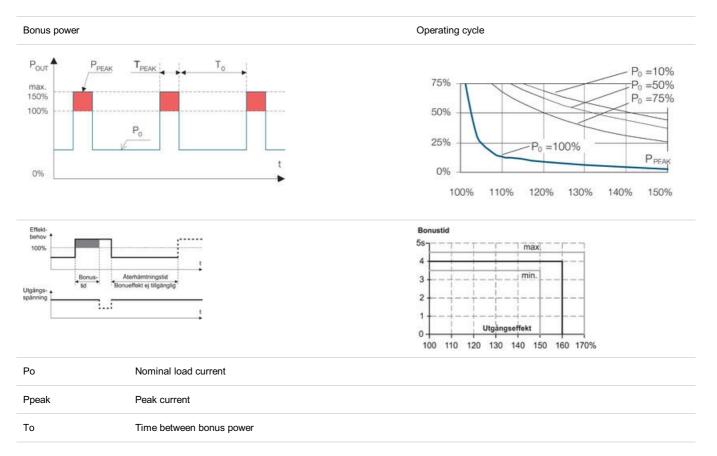


Remote control function



Bonus power

The power supply has a bonus power that enables high power output with maintained 48 V DC for 4 seconds, which is a big advantage when connected loads have high starting current, e.g. motors. How often you can use the bonus power depends on the application. With the diagram and formula below you can calculate the available repeat time for each application. Bonus power is available as soon as the power supply starts and immediately after a short circuit.



Tpeak	Peak current I time
Operating cycle	Tpeak/(Tpeak+To)
To=	Tpeak-(operating cycle*Tpeak)/operating cycle

E.g. Peak current (Ppeak) is 25A =125 %. Peak time is 3 seconds. Nominal load current (Po) is 15A. 15A =75 % of I_{nom} . According to the diagram the operating cycle is about 0.45. To=3 - (0.45*3) / 0.45=3.6. Maximal repeat time of the bonus power is 3.6 seconds

Switching

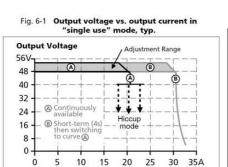


Function	Overload LED	DC OK LED	DC OK relay contact	
Normal operation	Off	On	Closed	
During bonus power output	Off	On	Closed	
Overload (Hick-up)	Blinks	Off	Open	
Short circuit	Blinks	Off	Open	
Over temperature	Blinks	Off	Open	
Remote shutdown	Blinks	Off	Open	
No input voltage	Off	Off	Open	

SPECIFICATIONS

Input voltage range	Wide-range
Number of phases	1
Input voltage AC	100-240 V
Input voltage ac min	90 V AC
Input voltage ac max	264 V AC
Inrush current at 120 V ac typical	17 A
Inrush current at 230 V ac typical	11 A
Power Factor at 120 V AC, full load. Typical	0.99
Power Factor at 230 V AC, full load. Typical	0.99
Supply Frequency	50-60 ±6 %
Power Consumption At 120 V AC	8.6 A

Output voltage 48 V DC Output voltage min 48 V DC Output voltage max 54 V DC Output voltage max 50 V DC Output voltage max 90 W Output Current 900 W Effect 900 V/DC Power Reduction Of 60 To 70 ° C 24 W/C Catalant Ripple.max 50 ° C Temperature Range Without Derating From 25 ° C Temperature Range Without Derating From 93 % Efficiency At 120 V AC, full load. Typical 93 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 25 ° C File 12 ° M Efficiency At 230 ° C 3	Power Consumption At 230 V AC	4.5 A
Output voltage max48 V DCOutput voltage max54 V DCOutput Current20 ABerden Content20 APower Reduction Of 60 To 70 °C24 W/°CRipple.max24 W/°CTemperature Range Without Derating From25 °CEfficiency At 20 V AC, full load. Typical93.9 %Efficiency At 20 V AC, full load. Typical93.9 %Efficiency At 20 V AC, full load. Typical93.9 %Efficiency At 20 V AC, full load. Typical9000 hEfficiency At 20 V AC, full load. Typical9000 hEfficiency At 20 V AC, full load. Typical9000 hEfficiency At 20 V AC, full load. Typical9000 hUtiftetim et 120 V AC, full load. Typical9000 hEfficiency At 20 V AC, full load. Typical9000 hUtiftetim et 20 V AC, full load. Typical12 fromBig full12 fromCompany12 fromEfficiency At 20 V AC, full load. Typical9000 hStream12 fromCompany12 fromEfficiency At 20 V AC, full load. Typical9000 hStream12 fromEfficiency At 20 V AC, full load. Typical9000 hStream12 fromEfficiency At 20 V AC, full load. Typical9000 hStream12 fromEfficiency At 20 V AC, full load. Typical9000 hStream12 fromEfficiency At 20 V AC, full load. Typical9000 hStream12 fromEfficiency At 20 from Typical9000 hEfficiency At 20 V AC, full load. Typical<	Type Power Supply	AC-DC
Output voltage max 54 V DC Output Current 20 A Power Reduction Of 60 To 70 °C 960 W Power Reduction Of 60 To 70 °C 24 W/°C Ripple.max 150 mV pp Temperature Range Without Derating From 25 °C Temperature Range Without Derating To 60 °C Efficiency At 120 V AC, full load. Typical 93 9 % Efficiency At 230 V AC, full load and +40 °C 80000 h Efficiency At 230 V AC, full load and +40 °C 90000 h Efficiency At 230 V AC, full load and +40 °C 90000 h Vietterim et 120 V ac, full load and +40 °C 90000 h Vietterim et 230 V AC, full load and +40 °C 90000 h Vietterim et 230 V AC, full load and +40 °C 90000 h Vietterim et 230 V AC, full load and +40 °C 90000 h Vietterim et 230 V AC, full load and +40 °C 90000 h Vietterim et 230 V AC, full load and +40 °C 90000 h Vietterim et 230 V AC, full load and +40 °C 90000 h Vietterim et 230 V AC, full bod and +40 °C 90000 h Vietterim et 230 V AC, full bod and +40 °C 9000 h Vietterim et 230 V AC, full bod and +40 °C	Output voltage	48 V DC
Output Current20 AEffect960 WPower Reduction Of 60 To 70 °C24 W/r CRipple.max150 m/v pTemperature Range Without Derating From25 °C CTemperature Range Without Derating To0° CU50 % CEfficiency At 20 V AC, full load. Typical93 %Efficiency At 20 V AC, full load and +40 °C68000 hEfficiency At 20 V AC, full load and +40 °C90000 hU90000 hU90000 hU25 mWith125 mDepth126 mmU127 mmWeight9king-dampEfferiancy At 20 V AC, full load and +00 °C19 kgU19 kg <th>Output voltage min</th> <th>48 V DC</th>	Output voltage min	48 V DC
Effect960 WPower Reduction Of 60 To 70 ° C24 W/° CRipple.max150 mV ppTemperature Range Without Derating From25 ° CTemperature Range Without Derating Tom60 ° CEfficiency At 20 V AC, full load. Typical93.9 %Efficiency At 20 V AC, full load. Typical93.9 %Efficiency At 20 V AC, full load. Typical6000 hEfficiency At 20 V AC, full load and +40 ° C6000 hMitter at 20 V ac, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hUtetime at 20 V ac, full load and +40 ° C90000 hWidth125 rmEfficiency At 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 V AC, full load and +40 ° C90000 hBrige Ce for 20 20 C C C SA EX, GL (EC EX, UL9000 hBrige Ce for 20 20 C C C SA, EX, GL (EC EX, UL9000 hBrige Ce for 20 20 C C C SA, EX, GL (EC EX, UL9	Output voltage max	54 V DC
Power Reduction Of 60 To 70 ° C 24 W/°C Ripple.max 150 mV pp Temperature Range Without Derating From -25 °C Temperature Range Without Derating Tom 60 °C Efficiency A1 20 V AC, full load. Typical 93 9% Efficiency A2 30 V AC, Typical 93 9% Efficiency A1 20 V AC, full load and +40 °C 6000 h Lifetime at 220 V ac, full load and +40 °C 60000 h MTBF (IEC 61709) 230 V AC, Maximum Load, 40° 90000 h Viet 125 mm Viet 125 mm Viet 126 mm Viet 19 kg Viet 19 kg Viet 19 kg Viet Primersing Primers	Output Current	20 A
Ripple.max 150 mV pp Temperature Range Without Derating From -25 °C Temperature Range Without Derating Tom 60 °C Efficiency At 20 V AC, full load. Typical 93.9 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 95 % Efficiency At 230 V AC, full load. Typical 9000 h Efficiency At 230 V AC, full load. Typical 9000 h Itletime at 120 V ac, full load and +40 °C 9000 h Viettime At 230 V AC, Maximum Load, 40 °C 9000 h Viettime At 200 V AC, Maximum Load, 40 °C 9000 h Viettime At 200 V AC, Maximum Load, 40 °C 9000 h Viettime At 200 V AC, Maximum Load, 40 °C 9000 h Viettime At 200 V AC, Maximum Load, 40 °C 9000 h Viettime At 200 V AC, Maximum Load, 40 °C 9000 h Viettime At 200 V AC, Maximum Load, 40 °C 125 mm Viettime At 200 V AC, Maximum Load, 40 °C 126 mm Viettime At 200 V AC, Maximum Load, 40 °C 19 kg Potentime At 200 V AC, Maximum Load, 40 °C Poincalonant Atternetime Atternetim	Effect	960 W
Temperature Range Without Derating From -25 °C Temperature Range Without Derating To 60 °C Efficiency At 120 V AC, full load. Typical 93.9 % Efficiency At 230 V AC, full load. Typical 95.9 % Efficiency At 230 V AC, full load. Typical 95.000 h Efficiency At 230 V AC, full load and +40 °C 60000 h MTBF (IEC 61709) 230 V AC, Maximum Load, 40° 90000 h Withhut Derating To 90000 h Temperature Range Without Derating From 90000 h Withhut Derating To 90000 h Uffetime at 230 V ac, full load and +40 °C 90000 h Withhut Derating To 124 mm Depth 19 kg To 9000 h Series Dimension Q Approvals Approvals Approvals Approvals Adurinium 41000000000000000000000000000000000000	Power Reduction Of 60 To 70 ° C	24 W/°C
Temperature Range Without Derating To 60 °C (Compensation of the second of the sec	Ripple. max	150 mV pp
Efficiency At 120 V AC, full load. Typical 93.9 % Efficiency At 230 V AC, Typical 93.9 % Efficiency At 230 V AC, full load. Typical 95 % Lifetime at 120 V ac, full load and +40 ° C 68000 h Diffe (EC 61709) 230 V AC, Maximum Load, 400 ° 90000 h MTBF (IEC 61709) 230 V AC, Maximum Load, 400 ° 30000 h Width 125 mm Height 124 mm Dopth 127 mm Kiefer Ageneration Spring-clamp Wight 1.9 kg Approvals Dimension Q Approvals ABS, CE, CSA, EX, GL, IECEX, UL Material Protection Aluminium Hold-up time at 120 V AC, full load. Typical. 27 ms	Temperature Range Without Derating From	-25 °C
Efficiency At 230 V AC. Typical93.9 %Efficiency At 230 V AC, full load. Typical96 %Lifetime at 120 V ac, full load and +40 ° C68000 hLifetime at 230 V ac, full load and +40 ° C90000 hMTEF (IEC 61709) 230 V AC, Maximum Load, 40 °300000 hWidth125 mmHeight124 mmDepth127 mmKeight1.9 kgTomo1.9 kg<	Temperature Range Without Derating To	60 °C
Efficiency At 230 V AC, full load. Typical 95 % Lifetime at 120 V ac, full load and +40 ° C 66000 h B000 h 9000 h MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C 90000 h Width 125 mm Height 124 mm Depth 1.9 kg Kamp type Spring-clamp Series Dimension Q Approvals ASS, CB, CE, SA, EX, GL, IECEX, UL Meterial Protection Auminium Hold-up time at 120 V AC, full load. Typical. 27 ms	Efficiency At 120 V AC, full load. Typical	93.9 %
Lifetime at 120 V ac, full load and +40 ° C Lifetime at 230 V ac, full load and +40 ° C MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C Width 125 mm Height 125 mm 125 mm 124 mm 124 mm 124 mm 124 mm 127 mm 127 mm 127 mm 128 mp 129 mp 120	Efficiency At 230 V AC. Typical	93.9 %
Lifetime at 230 V ac, full load and +40 ° C 9000 h MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C Width 125 mm 125 mm 124 mm 124 mm 124 mm 124 mm 127 mm 127 mm 127 mm 138 res 139 re	Efficiency At 230 V AC, full load. Typical	95 %
MTBF (IEC 61709) 230 V AC, Maximum Load, 40 c 300000 h c 125 mm Width 125 mm Height 124 mm Depth 127 mm Weight 1.9 kg Camp type Spring-clamp Series Dimension Q Approvals ABS, CB, CE, CSA, EX, GL, IECEX, UL DC relay output Yes Hold-up time at 120 V AC, full load. Typical. 27 ms	Lifetime at 120 V ac, full load and +40 ° C	68000 h
C Width 125 mm Height 124 mm Depth 127 mm Weight 19 kg Clamp type Spring-clamp Stries Dimension Q Approvals ABS, CB, CE, SA, EX, GL, IECEX, UL Dt relay output Yes Hold-up time at 120 V AC, full load. Typical. 27 ms	Lifetime at 230 V ac, full load and +40 ° C	90000 h
Height 124 mm Depth 127 nm Weight 1.9 kg Clamp type Spring-clamp Series Dimension Q Approvals ABS, CB, CE, CSA, EX, GL, IECEX, UL Dc relay output Yes Material Protection Aluminium Hold-up time at 230 V AC, full load. Typical. 27 ms	MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C	300000 h
Depth 127 mm Weight 1.9 kg Clamp type Spring-clamp Series Dimension Q Approvals ABS, CB, CE, CSA, EX, GL, IECEx, UL DC relay output Yes Material Protection Aluminium Hold-up time at 120 V AC, full load. Typical. 27 ms	Width	125 mm
Weight 1.9 kg Clamp type Spring-clamp Series Dimension Q Approvals ABS, CB, CE, SA, EX, GL, IECEx, UL DC relay output Yes Material Protection Aluminium Hold-up time at 120 V AC, full load. Typical. 27 ms Yes 27 ms	Height	124 mm
Clamp type Spring-clamp Series Dimension Q Approvals ABS, CB, CE, CSA, EX, GL, IECEx, UL DC relay output Yes Material Protection Aluminium Hold-up time at 120 V AC, full load. Typical. 27 ms Yes Yes	Depth	127 mm
SeriesDimension QApprovalsABS, CB, CE, CSA, EX, GL, IECEx, ULDC relay outputYesMaterial ProtectionAluminiumHold-up time at 120 V AC, full load. Typical.27 msHold-up time at 230 V AC, full load. Typical.27 ms	Weight	1.9 kg
ApprovalsABS, CB, CE, CSA, EX, GL, IECEx, ULDC relay outputYesMaterial ProtectionAluminiumHold-up time at 120 V AC, full load. Typical.27 msBod - up time at 230 V AC, full load. Typical.27 ms	Clamp type	Spring-clamp
DC relay output Yes Material Protection Aluminium Hold-up time at 120 V AC, full load. Typical. 27 ms Hold-up time at 230 V AC, full load. Typical. 27 ms	Series	Dimension Q
Material Protection Aluminium Hold-up time at 120 V AC, full load. Typical. 27 ms Hold-up time at 230 V AC, full load. Typical. 27 ms	Approvals	ABS, CB, CE, CSA, EX, GL, IECEx, UL
Hold-up time at 120 V AC, full load. Typical.27 msHold-up time at 230 V AC, full load. Typical.27 ms	DC relay output	Yes
Hold-up time at 230 V AC, full load. Typical. 27 ms	Material Protection	Aluminium
	Hold-up time at 120 V AC, full load. Typical.	27 ms
IP Class IP20	Hold-up time at 230 V AC, full load. Typical.	27 ms
	IP Class	IP20



25

Output Current

Fig. 6-4 Dynamic overcurrent capability, typ.

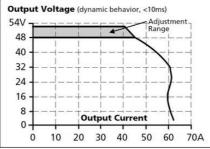


Fig. 12-1 Efficiency vs. output current at 48V, typ.

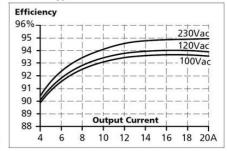


Fig. 12-2 Losses vs. output current at 48V, typ.

10 15

0 5

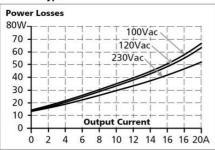
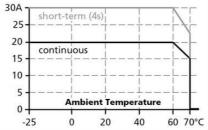
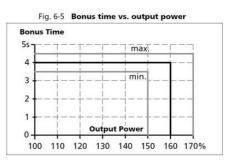


Fig. 18-1 Output current vs. ambient temp.

Allowed Output Current at 48V





Maximal wire length" for a fast (magnetic) tripping:

	0.75mm ²	1.0mm ²	1.5mm ²	2.5mm ²
C-2A	68m	89m	>100m	>100m
C-3A	53m	75m	>100m	>100m
C-4A	44m	57m	88m	>100m
C-6A	18m	25m	38m	58m
C-8A	9m	12m	18m	24m
C-10A	8m	11m	16m	23m
C-13A	4m	5m	8m	12m
B-6A	39m	50m	74m	>100m
B-10A	21m	29m	44m	68m
B-13A	13m	21m	34m	52m
B-16A	7m	9m	13m	17m
B-20A	2m	3m	4m	5m

Fig. 6-3 Short-circuit on output, Hiccup^{PLUS} mode, typ.

