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

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 connection is gone restarts the power supply automatically. 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.

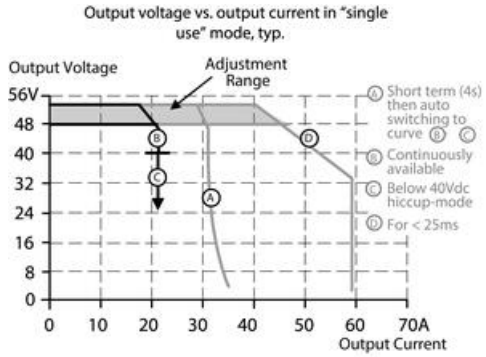
Simple diagnostics via DC-OK relay that falls on the output voltage deviates more than 10% from the set value, a green LED indicates DC-OK, Red LED indicates overload.

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).

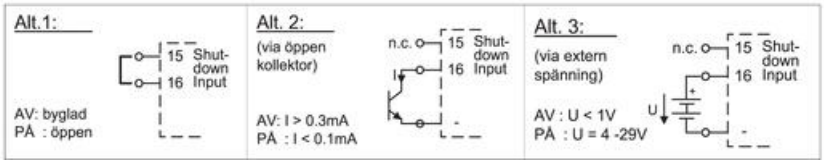
Active PFC reduces power consumption, harmonics close to zero and in addition, the power distribution in phases much smoother at power asymmetry.

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

Output charcteristic



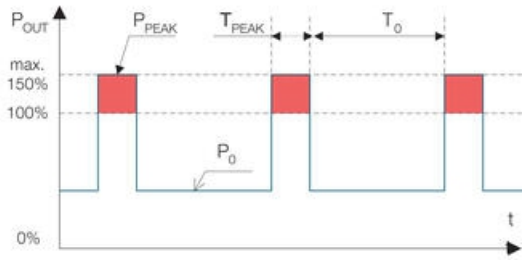
Remote control function

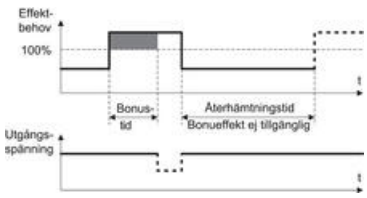


Bonus power

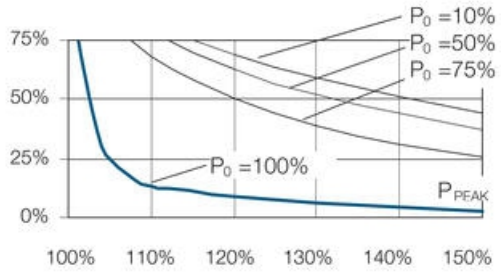
The power supply has a bonus power that enables high power output with maintained 48 V DC for 4 seconds, which is a big advantage when connected loads have high starting current, e.g. motors. How often you can use the bonus power depends on the application. With the diagram and formula below you can 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.

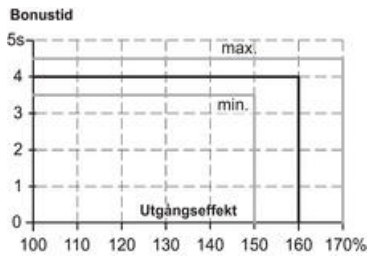
Bonus power





Operating cycle





Po	Nominal load current
Ppeak	Peak current
To	Time between bonus power

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

Power Consumption At 230 V AC	4.5 A
Type Power Supply	AC-DC
Output voltage	48 V DC
Output voltage min	48 V DC
Output voltage max	54 V DC
Output Current	20 A
Effect	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. Typical	93.9 %
Efficiency At 230 V AC, full load. Typical	95 %
Lifetime at 120 V ac, full load and +40 ° C	68000 h
Lifetime at 230 V ac, full load and +40 ° C	90000 h
MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C	300000 h
Width	125 mm
Height	124 mm
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
Hold-up time at 230 V AC, full load. Typical.	27 ms
IP Class	IP20

Fig. 6-1 **Output voltage vs. output current in "single use" mode, typ.**

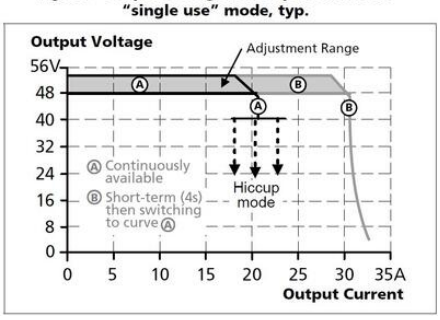


Fig. 6-4 **Dynamic overcurrent capability, typ.**

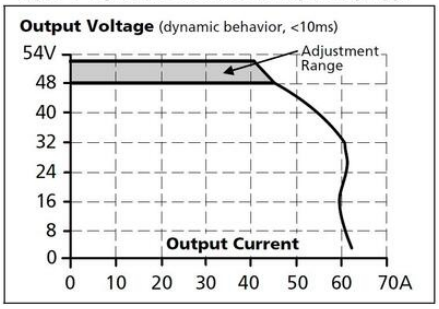


Fig. 12-1 **Efficiency vs. output current at 48V, typ.**

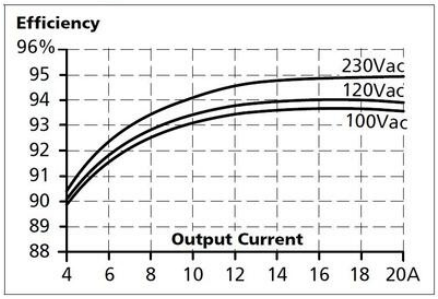


Fig. 12-2 **Losses vs. output current at 48V, typ.**

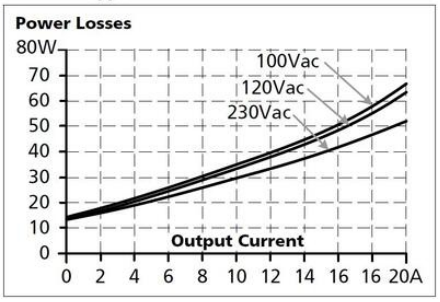


Fig. 18-1 **Output current vs. ambient temp.**

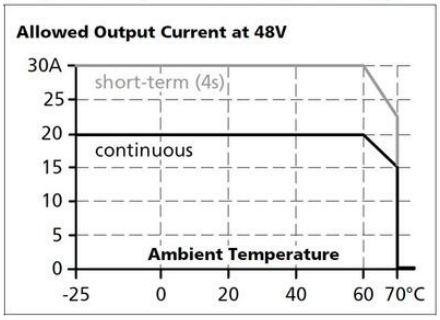
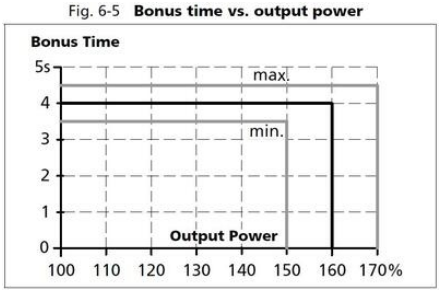


Fig. 6-5 **Bonus time vs. output power**



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

	0.75mm²	1.0mm²	1.5mm²	2.5mm²
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.**

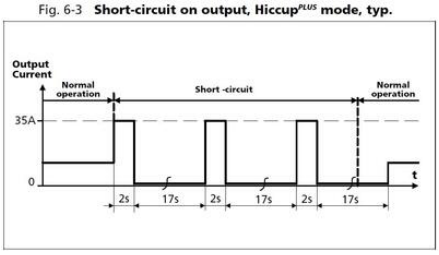


Fig. 16-1 **Front side**

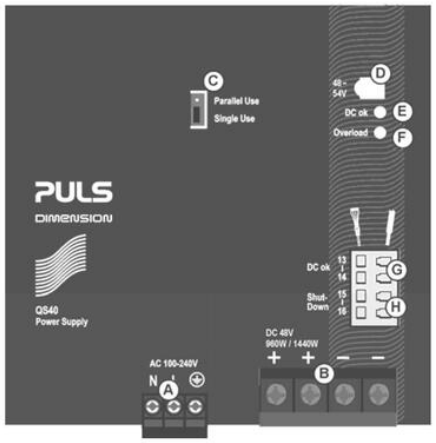


Fig. 23-1 **Front view**