

# POWER SUPPLY 1-PHASE, 24 V DC DIMENSION Q SERIES

QS10.241  
PSU 100-240V ac I/P 24V dc 10A 240W O/P

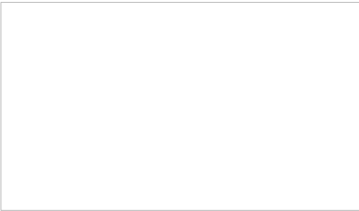
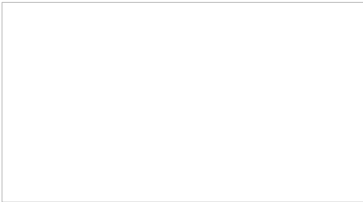
- Power supply unit for DIN rail. 100-240 V ac/110 V dc
- 60/82 mm wide
- Up to 93.9% efficiency
- 50% bonus power
- Maximum performance

## Product description

Puls Dimension Q is a new generation of power supply unit with very small construction dimensions and many technical benefits. The power supply unit has low inrush current (even with warm starts), active PFC, which provides a power factor close to one, expanded temperature range and active protection against line transients. (Not QS20) The power supply unit has high efficiency, which provides long lifetime both for the unit and adjacent products. Temperature increases in the cabinet are also kept at a low level. Furthermore, there is a relay output (DC OK) that is deactivated when the output voltage deviates more than 10 % from the set value. The bonus power provides an extra 50 % reserve with retained 24 V, which is an advantage when connected loads have high starting currents. The power supply unit has a high short-circuit current that simplifies tripping of secondary fuses. Both the bonus power and short-circuit current are time-limited to 4 seconds to avoid constant overloading of the power supply unit and wiring. **QS20.241** If a short circuit lasts longer than 4 seconds, the power supply unit will continue in so-called hick-up mode. The output power is reduced to nearly zero for about 17 seconds. The power supply unit then makes a new start-up attempt for 2-4 seconds. If the short circuit remains, a new pause of 17 seconds is taken. Once the short circuit is remedied, the power supply unit automatically returns to service. For more technical information, consult the **general information** at the beginning of the power supply section.

## Bonus power

The power supply unit has bonus power that enables high power extraction with retained 24 V DC for 4 seconds, which is a major advantage when connected loads have high starting currents, such as the case with motors. How often bonus power can be utilised depends on the application. With the following diagram and formula, the repeat time can be calculated for each application. The bonus power is available as soon as the power supply unit is started and directly after a short circuit.

Bonus power	Operating cycle
	
Po	Nominal load current
Ppeak	Peak current
To	Time between bonus power



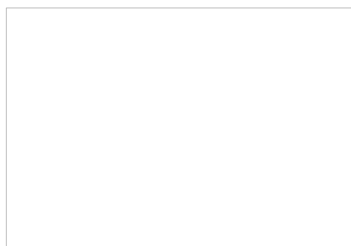
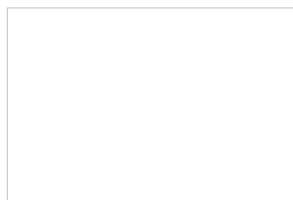
<b>Tpeak</b>	Peak current I time
<b>Operating cycle</b>	$T_{peak} / (T_{peak} + T_o)$
<b>To</b>	$T_{peak} - (\text{operating cycle} * T_{peak}) / \text{operating cycle}$

Example: Nominal load current (Po) is 7.5 A. Peak current (Ppeak) is 12 A

20 % of  $I_{nom}$ . The peak time is 3 seconds.  $7.5 \text{ A} = 75 \%$  of  $I_{nom}$ . According to the diagram, the operating cycle is about 50 %.  $T_o = 3 - (0.5 * 3) / 0.5 = 3$

Maximum repeat time of the power boost is 3 seconds

#### Output characteristics



QS10.241

QS20.241

#### Specifications

<b>Active Transient</b>	Yes
<b>Approvals</b>	ABS, CB, CE, CSA, GL, UL
<b>DC relay output</b>	Yes
<b>Depth</b>	117
<b>Effect</b>	240
<b>Efficiency At 120 V AC, full load. Typical</b>	92.6
<b>Efficiency At 230 V AC, full load. Typical</b>	93.5
<b>Efficiency At 230 V AC. Typical</b>	92.4
<b>Height</b>	124
<b>Hold-up time at 120 V AC, full load. Typical.</b>	27
<b>Hold-up time at 230 V AC, full load. Typical.</b>	28
<b>Input voltage AC</b>	100-240 V
<b>Input voltage ac max</b>	276
<b>Input voltage ac min</b>	85
<b>Input voltage DC</b>	110-150 V
<b>Input voltage dc max</b>	187

Input voltage dc min	88
Input voltage range	Wide-range
Inrush current at 120 V ac typical	4
Inrush current at 230 V ac typical	7
IP Class	IP20
Lifetime at 120 V ac, full load and +40 ° C	68000
Lifetime at 230 V ac, full load and +40 ° C	71000
MTBF (IEC 61709) 230 V AC, Maximum Load, 40 ° C	581000
Number of phases	1
Output Current	10
Output voltage	24
Output voltage max	28
Output voltage min	24
Power Consumption At 120 V AC	2.22
Power Consumption At 230 V AC	1.22
Power Factor at 120 V AC, full load. Typical	0.98
Power Factor at 230 V AC, full load. Typical	0.92
Power Reduction Of 60 To 70 ° C	6
Ripple. max	50
Series	Dimension Q
Supply Frequency	50-60 ±6 %
Temperature Range Without Derating From	-25
Temperature Range Without Derating To	60
Weight	0.9
Width	60

Fig. 6-1 Output voltage vs. output current, typ.

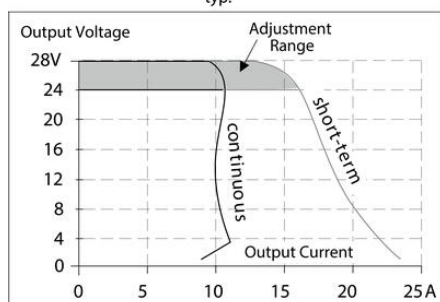


Fig. 15-1 Output current vs. ambient temp.

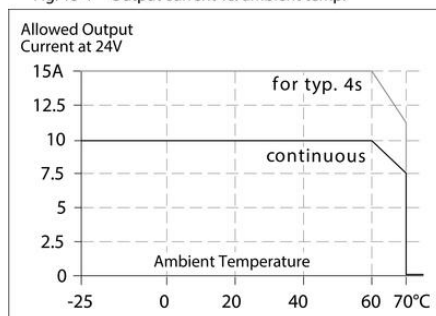


Fig. 9-2 Losses vs. output current at 24V, typ.

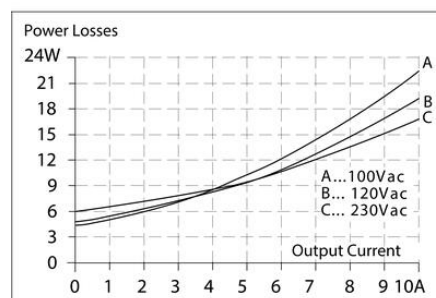


Fig. 9-1 Efficiency vs. output current at 24V, typ

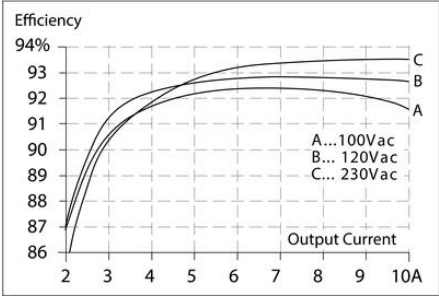
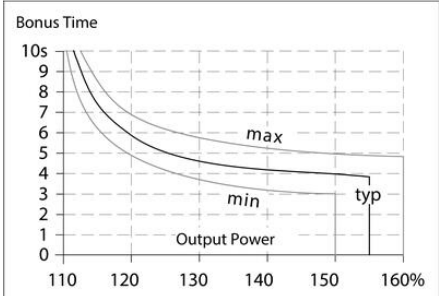


Fig. 6-2 Bonus time vs. output power



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

	0.75mm <sup>2</sup>	1.0mm <sup>2</sup>	1.5mm <sup>2</sup>	2.5mm <sup>2</sup>
C-2A	23m	29m	48m	69m
C-3A	20m	24m	38m	57m
C-4A	12m	16m	22m	33m
C-6A	5m	7m	9m	14m
C-8A	3m	4m	5m	7m
C-10A	2m	3m	4m	6m
C-13A	1m	1m	2m	2m
B-6A	11m	14m	24m	34m
B-10A	5m	8m	11m	18m
B-13A	4m	6m	8m	10m

\*) Don't forget to consider twice the distance to the load (or cable length) when calculating the total wire length (+ and - wire).

