



POWER SUPPLY

- AC 100-240V Wide-range Input
- Width only 60mm
- Efficiency up to 93.5%
- 150% (360W) Peak Load Capability
- Easy Fuse Tripping due to High Overload Current
- Active Power Factor Correction (PFC)
- Negligible low Inrush Current Surge
- Short-term Operation down to 60Vac and up to 300Vac
- Full Power Between -25°C and +60°C
- DC-OK Relay Contact
- Quick-connect Spring-clamp Terminals
- 3 Year Warranty

GENERAL DESCRIPTION

The most outstanding features of this Dimension Q-Series DIN-rail power supply are the high efficiency and the small size, which are achieved by a synchronous rectification and further novel design details. The Q-Series is part of the Dimension family, existing alongside the lower featured C-Series.

With short-term peak power capability of 150% and built-in large sized output capacitors, these features help start motors, charge capacitors and absorb reverse energy and often allow a unit of a lower wattage class to be used.

High immunity to transients and power surges as well as low electromagnetic emission makes usage in nearly every environment possible.

The integrated output power manager, a wide range input voltage design and virtually no input inrush current make installation and usage simple. Diagnostics are easy due to the dry DC-ok contact, a green DC-ok LED and red overload LED.

Unique quick-connect spring-clamp terminals allow a safe and fast installation and a large international approval package for a variety of applications makes this unit suitable for nearly every situation.

SHORT-FORM DATA

Output voltage	DC 24V	
Adjustment range	24 - 28V	
Output current	10 – 9A	continuous
	15 – 13.5A	for typ. 4s
Output power	240W	continuous
	360W	for typ. 4s
Output ripple	< 50mVpp	20Hz to 20MHz
Input voltage	AC 100-240V	±15%
Mains frequency	50-60Hz	±6%
AC Input current	2.22 / 1.22A	at 120 / 230Vac
Power factor	0.98 / 0.92	at 120 / 230Vac
AC Inrush current	typ. 4 / 7A peak	at 120 / 230Vac
Efficiency	92.6 / 93.5%	at 120 / 230Vac
Losses	19.1 / 16.7W	at 120 / 230Vac
Temperature range	-25°C to +70°C	operational
Derating	6W/°C	+60 to +70°C
Hold-up time	typ. 27 / 28ms	at 120 / 230Vac
Dimensions	60x124x117mm	WxHxD

ORDER NUMBERS

Power Supply	QS10.241	24-28V Standard unit
	QS10.241-A1	ATEX approved unit
	QS10.241-C1	Conformal coated unit
	QS10.241-D1	Extended DC-Input
Accessory	ZM1.WALL	Wall mount bracket
	ZM13.SIDE	Side mount bracket
	YR2.DIODE	Redundancy module
	UF20.241	Buffer module

MARKINGS





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TERMINOLOGY AND ABBREVIATIONS

PE and  symbol	PE is the abbreviation for Protective Earth and has the same meaning as the symbol  .
Earth, Ground	This document uses the term "earth" which is the same as the U.S. term "ground".
T.b.d.	To be defined, value or description will follow later.
AC 230V	A figure displayed with the AC or DC before the value represents a nominal voltage with standard tolerances (usually ±15%) included. E.g.: DC 12V describes a 12V battery disregarding whether it is full (13.7V) or flat (10V)
230Vac	A figure with the unit (Vac) at the end is a momentary figure without any additional tolerances included.
50Hz vs. 60Hz	As long as not otherwise stated, AC 230V parameters are valid at 50Hz mains frequency.
may	A key word indicating flexibility of choice with no implied preference.
shall	A key word indicating a mandatory requirement.
should	A key word indicating flexibility of choice with a strongly preferred implementation.

1. INTENDED USE

This device is designed for installation in an enclosure and is intended for the general use such as in industrial control, office, communication, and instrumentation equipment.

Do not use this power supply in aircraft, trains, nuclear equipment or similar systems where malfunction may cause severe personal injury or threaten human life.

This device is designed for use in hazardous, non-hazardous, ordinary or unclassified locations.

2. INSTALLATION REQUIREMENTS

This device may only be installed and put into operation by qualified personnel.

This device does not contain serviceable parts. The tripping of an internal fuse is caused by an internal defect.

If damage or malfunction should occur during installation or operation, immediately turn power off and send unit to the factory for inspection.

Mount the unit on a DIN-rail so that the output terminals are located on the top and the input terminals are located on the bottom of the unit. For other mounting orientations see de-rating requirements in this document. See chapter 22.14.

This device is designed for convection cooling and does not require an external fan. Do not obstruct airflow and do not cover ventilation grid (e.g. cable conduits) by more than 30%!

Keep the following installation clearances: 40mm on top, 20mm on the bottom, 5mm on the left and right sides are recommended when the device is loaded permanently with more than 50% of the rated power. Increase this clearance to 15mm in case the adjacent device is a heat source (e.g. another power supply).

WARNING

Risk of electrical shock, fire, personal injury or death.

- Do not use the power supply without proper grounding (Protective Earth). Use the terminal on the input block for earth connection and not one of the screws on the housing.
- Turn power off before working on the device. Protect against inadvertent re-powering.
- Make sure that the wiring is correct by following all local and national codes.
- Do not modify or repair the unit.
- Do not open the unit as high voltages are present inside.
- Use caution to prevent any foreign objects from entering the housing.
- Do not use in wet locations or in areas where moisture or condensation can be expected.
- Do not touch during power-on, and immediately after power-off. Hot surfaces may cause burns.

3. AC-INPUT

AC input	nom.	AC 100-240V	suitable for TN-, TT- and IT mains networks
AC input range	min.	85-276Vac	continuous operation
	min.	60-85Vac	full power for 200ms, no damage between 0 and 85Vac
	min.	276-300Vac	< 500ms
Allowed voltage L or N to earth	max.	276Vac	continuous, IEC 62103
Input frequency	nom.	50–60Hz	±6%
Turn-on voltage	typ.	81Vac	steady-state value, see Fig. 3-1
Shut-down voltage	typ.	63Vac	steady-state value, see Fig. 3-1
	typ.	55Vac	dynamic value
External input protection	See recommendations in chapter 22.4.		

		AC 100V	AC 120V	AC 230V	
Input current	typ.	2.65A	2.22A	1.22A	at 24V, 10A, see Fig. 3-3
Power factor *)	typ.	0.99	0.98	0.92	at 24V, 10A, see Fig. 3-4
Crest factor **)	typ.	1.65	1.67	1.85	at 24V, 10A
Start-up delay	typ.	800ms	650ms	340ms	see Fig. 3-2
Rise time	typ.	8ms	8ms	8ms	0mF, 24V, 10A, see Fig. 3-2
	typ.	15ms	15ms	15ms	10mF, 24V, 10A, see Fig. 3-2
Turn-on overshoot	max.	100mV	100mV	100mV	see Fig. 3-2

*) The power factor is the ratio of the true (or real) power to the apparent power in an AC circuit.

**) The crest factor is the mathematical ratio of the peak value to RMS value of the input current waveform.

Fig. 3-1 Input voltage range

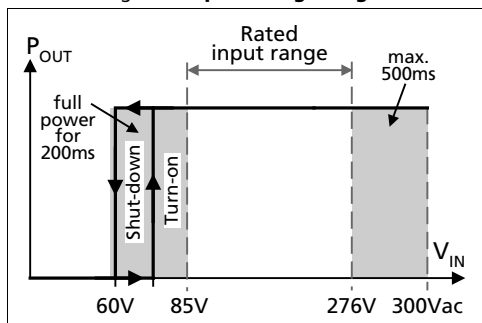


Fig. 3-2 Turn-on behavior, definitions

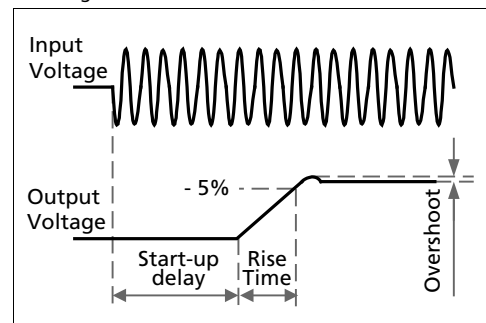


Fig. 3-3 Input current vs. output load at 24V

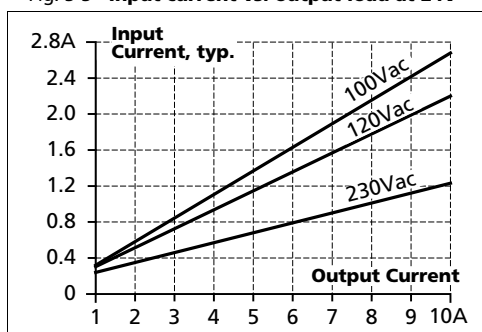


Fig. 3-4 Power factor vs. output load

