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POWER SUPPLY 3-PHASE, 24 V DC DIMENSION X SERIES

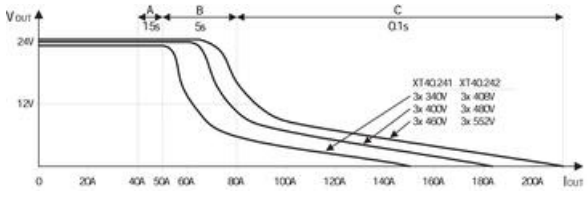
XT40.241
PSU 3PH 400V ac I/P 24V dc 40A 960W O/P

- Output current of 40 A
- 95.5 % efficiency
- 96 mm wide
- 25 % power boost
- Very high short-circuit current

PRODUCT DESCRIPTION

The power supplies in the Dimension X-Series include a new and innovative concept for generating an isolated DC voltage from a three-phase mains system. A semi-regulated resonant converter enables a very compact design, maximum efficiency and extremely competitive pricing with only a small compromise in the output voltage regulation, output ripple and hold-up time.
Weighing just 1.4 kg, the device provides 960 watts of continuous output power and an additional 25% power reserve for dynamic loads. The light-weight design along with compact dimensions facilitate straightforward mounting on DIN-rail.
Primary use are applications involving supplies to motors, valves and other load circuits with a high power consumption, where an accurate output voltage regulation which is standard on traditional switched-mode power supplies is not required.
Furthermore, these switched-mode power supplies can often replace mains transformers with rectifiers.

We recommend free space of 40 mm above and 20 mm under the unit, and 5 mm at the sides. (If adjacent components are considered as heat sources, a distance of 15 mm is recommended.)

Input voltage range/regulation	Output characteristics
	

TECHNICAL DATA

INPUT DATA

Input voltage ac	400 V
Input voltage ac min	360 V AC
Input voltage ac max	440 V AC
Inrush current at 400 V ac typical	4 A

Power factor at 400 V ac, full load. Typical	0.93
Number of phases	3

OUTPUT DATA

Output voltage	24 V DC
Output voltage min	24 V DC
Output voltage max	24 V DC
Output current	40 A
Power	960 W

EFFICIENCY / LIFETIME / MTBF

Efficiency at 400 V ac, full load, typical	95.5 %
Lifetime at 400 V ac, full load and +40 ° C	51000 h
MTBF (IEC 61709) 400 V ac, max loan, +40 °C	529000 h

DIMENSIONS

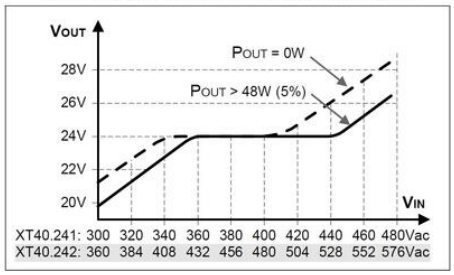
Width	96 mm
Height	124 mm
Depth	159 mm
Weight	1.4 kg

OTHER

Approvals	CB, CE, CSA, UL
Hold time at 400 V ac, typical full load	2 ms
IP class	IP20
Material protection	Aluminium
Supply frequency	50-60 ±6 %
Ripple max	200 mV pp
Series	Dimension X
Power consumption at 400 V ac	1.65 A
Power drop from +60 °C to + 70 °C	24 W/°C
Temperature min without derating	-25 °C
Temperature max without derating	60 °C

Type Power Supply	AC-DC
Active Transient	Yes

Fig. 5-1 **Output voltage vs. input voltage and input current**



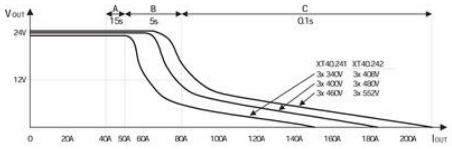


Fig. 15-1 **Output current vs. ambient temp.,**

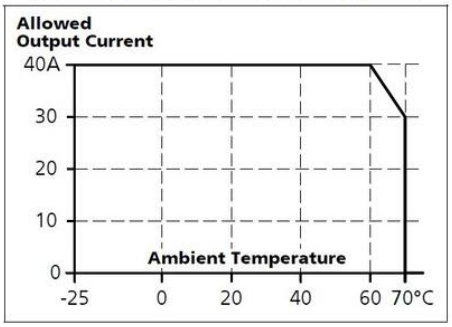


Fig. 9-1 **Efficiency vs. output current**

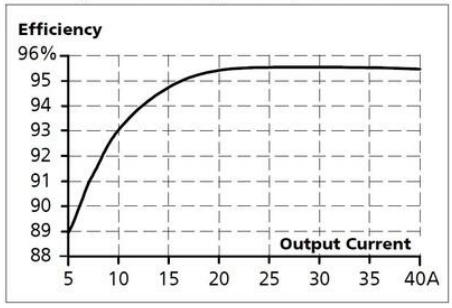
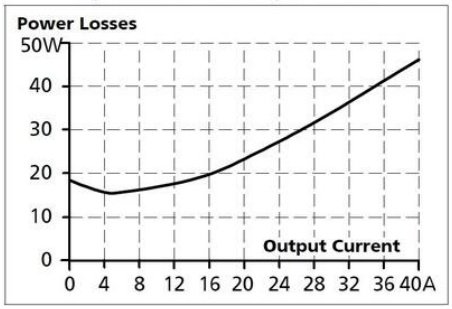


Fig. 9-2 **Losses vs. output current**



25. COMPARISON BETWEEN THE XT40, A TRANSFORMER AND A TRADITIONAL SWITCHED-MODE POWER SUPPLY

	XT40 Semi-regulated power supply	Traditional switched-mode power supply	Transformer power supply
Input voltage range	+	++	-
Inrush current surge	++	+	-
Hold-up time	-	+	-
Phase-loss operation	-	+	-
Efficiency	+++	++	-
Output voltage regulation	+	++	-
Output adjustment range	-	++	-
Ripple & noise voltage	-	++	-
Error diagnostics	++	++	-
Harmonic distortion (PFC)	+	+	-
EMC	++	++	+
Ease of installation	++	++	-
Size	+++	++	-
Weight	+++	+	-
	+++...very, very good	++...very good	+...good -...poor

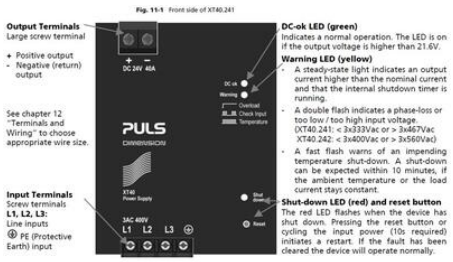


Fig. 22-1 **Front view**

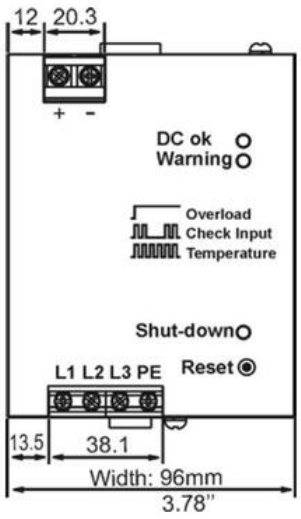


Fig. 22-2 **Side view**

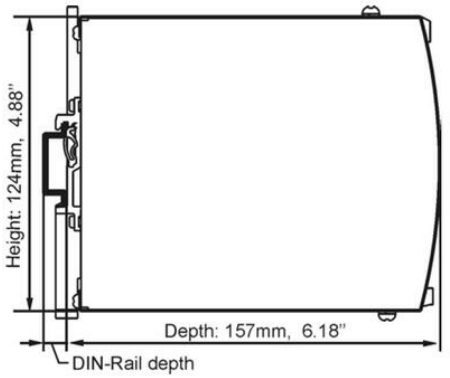
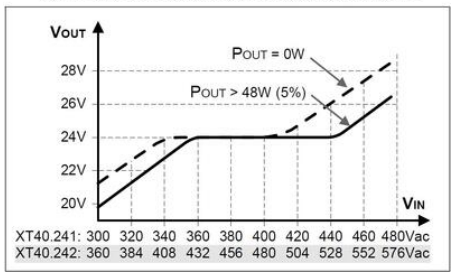


Fig. 5-1 **Output voltage vs. input voltage and input current**



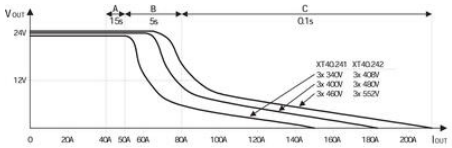


Fig. 15-1 **Output current vs. ambient temp.,**

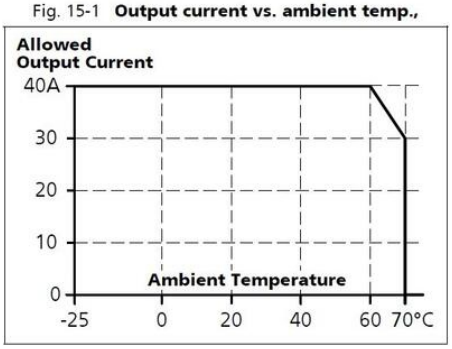


Fig. 9-1 **Efficiency vs. output current**

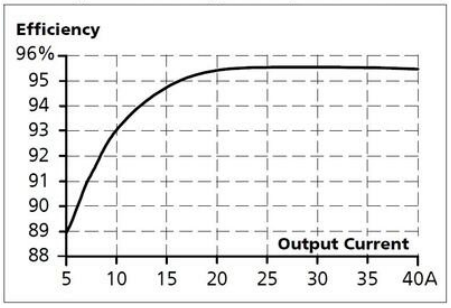
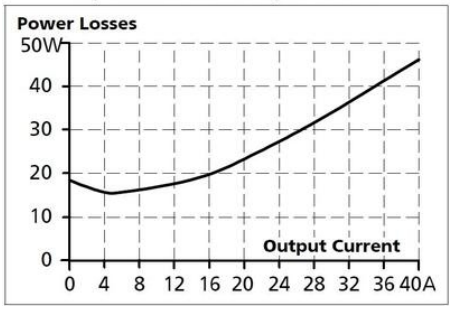


Fig. 9-2 **Losses vs. output current**

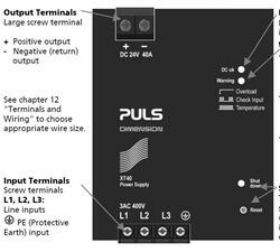


25. Comparison between the XT40, a Transformer and a Traditional Switched-mode Power Supply

	XT40 Semi-regulated power supply	Traditional switched-mode power supply	Transformer power supply
Input voltage range	+	++	-
Inrush current surge	++	+	-
Hold-up time	-	+	-
Phase-loss operation	-	+	-
Efficiency	+++	++	-
Output voltage regulation	+	++	-
Output adjustment range	-	++	-
Ripple & noise voltage	-	++	-
Error diagnostics	++	++	-
Harmonic distortion (PFC)	+	+	-
EMC	++	++	+
Ease of installation	++	++	-
Size	+++	++	-
Weight	+++	+	-

+++...very, very good ++...very good +...good -...poor

Fig. 11-1 Front side of XT40.241



Output Terminals
Large screw terminal

\+ Positive output
\- Negative (return) output

See chapter 12 "Terminals and Wiring" to choose appropriate wire size.

Input Terminals
Screw terminals
L1, L2, L3:
Line inputs
PE (Protective Earth) input

DC-ok LED (green)
Indicates a normal operation. The LED is on if the output voltage is higher than 21.6V.

Warning LED (yellow)
- A steady-state light indicates an output current higher than the nominal current and that the internal shutdown timer is running.
- A double flash indicates a phase-loss or too low / too high input voltage. (XT40.241: < 3x333Vac or > 3x467Vac XT40.242: < 3x400Vac or > 3x560Vac)
- A fast flash warns of an impending temperature shut-down. A shut-down can be expected within 10 minutes, if the ambient temperature or the load current stays constant.

Shut-down LED (red) and reset button
The red LED flashes when the device has shut down. Pressing the reset button or cycling the input power (10s required) initiates a restart. If the fault has been cleared the device will operate normally.

Fig. 22-1 **Front view**

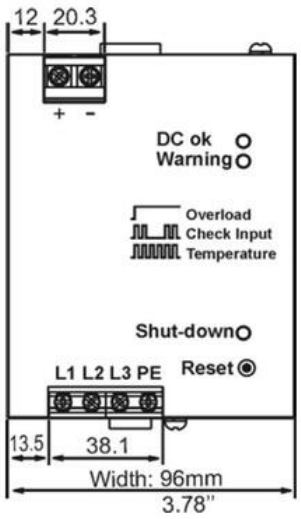


Fig. 22-2 **Side view**