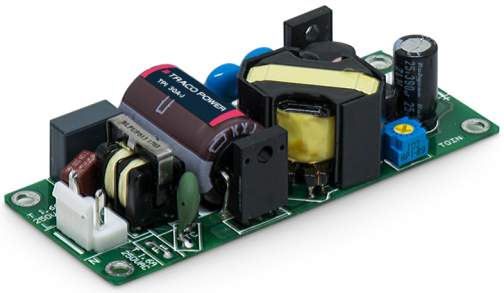
TRACO POWER

AC/DC Power Supply

TPI 30A-J Series, 30 Watt

- **30 Watt open frame power supplies in a 3.34" x 1.36" package**
- **Compact and cost efficient design**
- **Peak power function up to 130%**
- **I/O reinforced isolation 4000 VDC**
- **Operating temperature range –40°C to +85°C**
- **No load input power <0.3W (acc. ErP directive)**
- **High efficiency up to 90%**
- **Internal EN 55032 class B filter**
- **Protection class II prepared**
- **3-year product warranty**



UL 62368-1 IEC 62368-1

The TPI 30A-J is a 30 Watt AC/DC open frame power supplies series with a 4000 VDC reinforced isolation system. Our TPI line specifically focuses on providing cost efficient industrial power supplies in compact designs. This series offers a peak power function which enables the unit to deliver up to 130% of the rated power for up to 10 seconds. Excellent efficiency of up to 90% allows a compact design and an operating temperature range (natural convection) of –40°C to +60°C without derating, while going up to +85°C with either load derating or forced cooling. They are designed to meet the ErP directive (< 0.3 W no load power consumption) and come with an EMC characteristics dedicated for applications in industrial/automation and test & measurement fields. High reliability is provided by use of industrial high-quality grade components and an excellent thermal management. It makes the TPI 30A-J an ideal solution for any demanding industrial devices or space critical applications.

Models

Order Code	Output Power max.	Output Voltage nom. (adjustable)	Output Current max.	Output Current peak	Efficiency typ.
TPI 30-103A-JP	20 W	3.3 VDC (2.97 - 3.63 VDC)	6'000 mA	7'576 mA	83 %
TPI 30-105A-JP	30 W	5 VDC (4.0 - 5.5 VDC)	6'000 mA	8'000 mA	86 %
TPI 30-112A-JP		12 VDC (9.6 - 13.2 VDC)	2'500 mA	3'333 mA	89 %
TPI 30-115A-JP		15 VDC (12.0 - 16.5 VDC)	2'000 mA	2'667 mA	89 %
TPI 30-124A-JP		24 VDC (19.2 - 26.4 VDC)	1'250 mA	1'667 mA	88 %
TPI 30-136A-JP		36 VDC (28.8 - 39.6 VDC)	840 mA	1'111 mA	89 %
TPI 30-148A-JP		48 VDC (38.4 - 52.8 VDC)	630 mA	833 mA	91 %
TPI 30-153A-JP		53 VDC (42.4 - 58.3 VDC)	580 mA	755 mA	90 %

Input Specifications

Input Voltage	- AC Range	Operational Range:	85 - 264 VAC (Full Range)
		Rated Range:	100 - 240 VAC (Full Range)
	- DC Range	Operational Range:	120 - 370 VDC (Designed for, no certification)
		Polarity:	+DC: L / –DC: N
Input Frequency		Operational Range:	47 - 440 Hz
		Certified:	50/60 Hz
Power Consumption	- No load & Vin = 230 VAC		75 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC		75 mW max.
Input Current	- Full load & Vin = 230 VAC		400 mA max.
	- Full load & Vin = 115 VAC		800 mA max.
Input Inrush Current	- At 230 VAC		45 A max.
	- At 115 VAC		26 A max.
Input Protection			T 1.6 A / 250 VAC (Internal Fuse in L)
Recommended Input Fuse			(The need of an external fuse has to be assessed in the final application.)

Output Specifications

Output Voltage Adjustment			±10% (3.3 VDC models) –20% to +10% (other models) (By trim potentiometer) Output power must not exceed rated power!
Voltage Set Accuracy			±1% max.
Regulation	- Input Variation (Vmin - Vmax)		0.2% max.
	- Load Variation (0 - 100%)		0.7% max. (3.3 and 5 VDC model) 0.5% max. (other output models)
Boost Power			Output Current peak: See model table Peak power time: 5 s max. Peak power duty cycle: 20% max. Average operation power: 70% of full load (detailed description see application note)
Ripple and Noise (20 MHz Bandwidth)		3.3 VDC model:	50 mVp-p typ. (w/ 10 µF, 25 V, MLCC)
		5 VDC model:	50 mVp-p typ. (w/ 10 µF, 25 V, MLCC)
		12 VDC model:	50 mVp-p typ. (w/ 1 µF, 50 V, MLCC)
		15 VDC model:	50 mVp-p typ. (w/ 1 µF, 50 V, MLCC)
		24 VDC model:	50 mVp-p typ. (w/ 1 µF, 50 V, MLCC)
		36 VDC model:	50 mVp-p typ. (w/ 1 µF, 50 V, MLCC)
		48 VDC model:	50 mVp-p typ. (w/ 0.1 µF, 100 V, MLCC)
		53 VDC model:	50 mVp-p typ. (w/ 0.1 µF, 100 V, MLCC)
Capacitive Load		3.3 VDC model:	10'000 µF max.
		5 VDC model:	12'000 µF max.
		12 VDC model:	2'085 µF max.
		15 VDC model:	1'350 µF max.
		24 VDC model:	520 µF max.
		36 VDC model:	235 µF max.
		48 VDC model:	130 µF max.
		53 VDC model:	109 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.02 %/K max.
Hold-up Time	- At 230 VAC		80 ms min.
	- At 115 VAC		14 ms min.
Start-up Time	- At 230 VAC		800 ms max.
	- At 115 VAC		900 ms max.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			165% typ. of Iout max.
Overvoltage Protection			125 - 140% of Vout nom.

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

Transient Response	- Response Deviation		3% max. (50% to 75% Load Step at 2.5 A/µs)
	- Response Time		500 µs typ. (50% to 75% Load Step at 2.5 A/µs)

Safety Specifications

Standards	- IT / Multimedia Equipment		EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents		www.tracopower.com/tpi30a-j-safety-cert
Protection Class			Class I & II (Prepared): Reinforced Insulation
		See application note:	www.tracopower.com/info/protection-class.pdf
Energy Source	- Output, acc. to 62368-1		ES2 (53 Vout model) ES1
Power Source	- Output, acc. to 62368-1		PS3
Pollution Degree			PD 2
Over Voltage Category			OVC II

EMC Specifications

EMI (Emissions)	- Conducted Emissions		EN 55032 class A (internal filter) EN 55032 class B (internal filter) FCC 47 Part 15 class A (internal filter) FCC 47 Part 15 class B (internal filter)
	- Radiated Emissions		EN 55032 class A (internal filter) EN 55032 class B (internal filter) FCC 47 Part 15 class A (internal filter) FCC 47 Part 15 class B (internal filter)
	- Harmonic Current Emissions		EN 61000-3-2, class A
	- Voltage Fluctuations & Flicker		EN 61000-3-3
EMS (Immunity)			EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- Electrostatic Discharge	Air:	EN 61000-4-2, ±15 kV, perf. criteria A
		Contact:	EN 61000-4-2, ±8 kV, perf. criteria A
	- RF Electromagnetic Field		EN 61000-4-3, 20 V/m, perf. criteria A
	- EFT (Burst) / Surge		EN 61000-4-4, ±2 kV, perf. criteria A
		L to L:	EN 61000-4-5, ±1 kV, perf. criteria A
	- Conducted RF Disturbances		EN 61000-4-6, 20 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous:	EN 61000-4-8, 30 A/m, perf. criteria A
	- Voltage Dips & Interruptions	230 VAC / 50 Hz:	EN 61000-4-11
		115 VAC / 60 Hz:	EN 61000-4-11
EMC / Environmental	- Certification Documents		www.tracopower.com/tpi30a-j-emc-cert

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +85°C
	- Storage Temperature		–40°C to +85°C
Power Derating	- High Temperature		2.2 %/K above 60°C
	- Low Input Voltage		4.0 %/V below 90 VAC
		See application note:	www.tracopower.com/tpi30a-j-cc
Cooling System			Natural convection (20 LFM)
Altitude During Operation			5'000 m max.
Regulator Topology			Flyback Converter
Switching Frequency			30 - 60 kHz (PWM QR) 45 kHz typ. (PWM QR)
Insulation System			Reinforced Insulation
Working Voltage (rated)			272 VAC

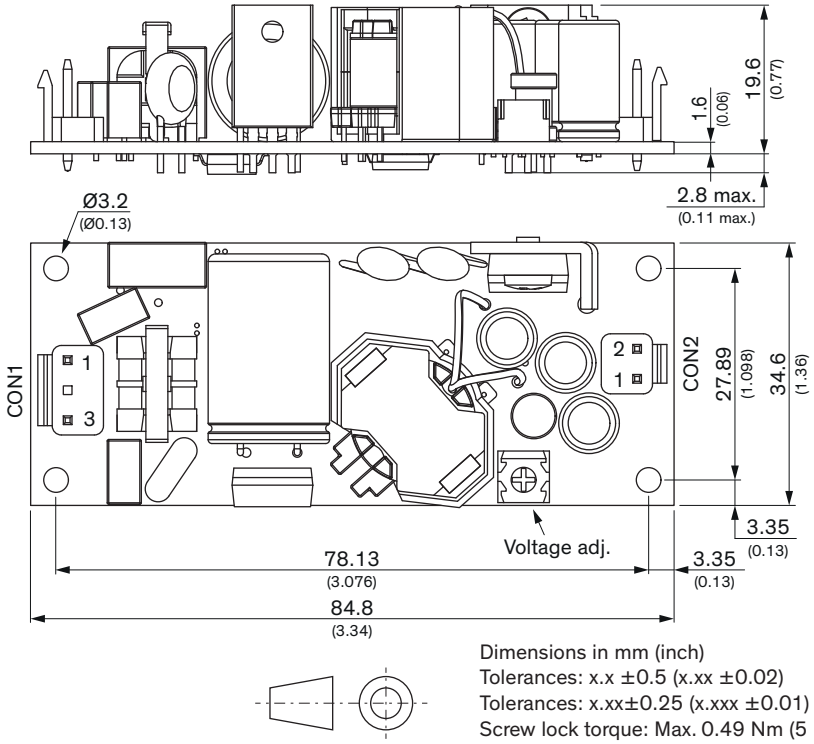
All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

Isolation Test Voltage	- Input to Output, 60 s	4'000 VDC
	- Input to Case or PE, 60 s	2'500 VDC
Isolation Resistance	- Input to Output, 500 VDC	100 MΩ min.
Leakage Current (at 264 VAC)	- Touch Current	100 µA max.
Reliability	- Calculated MTBF	3'340'000 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration	IEC 60068-2-6
	- Mechanical Shock	IEC 60068-2-27
Housing Type		Open Frame
Mounting Type		Chassis Mount
Connection Type		Pin Connector
Weight		60.5 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(a), 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	34ad3315-17cb-4c83-a0c2-7bee1cdcca61

Additional Information

Supporting Documents	www.tracopower.com/overview/tpi30a-j
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.x ±0.5 (x.xx ±0.02)
Tolerances: x.xx±0.25 (x.xxx ±0.01)
Screw lock torque: Max. 0.49 Nm (5 kgfcm)

Pin connectors

Input (CON1)		**Output** (CON2)	
Pin	**Function**	**Pin**	**Function**
1	Line	**1**	+Vout
3	Neutral	**2**	–Vout

Input: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-3N

Output: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-2N