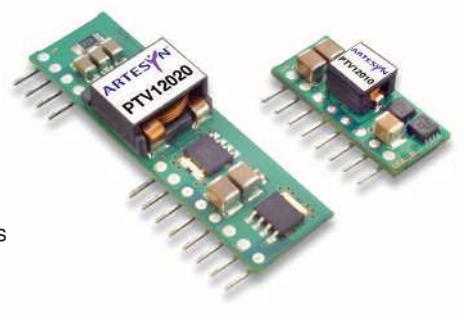
PTV03020

3.3 Vin single output

NEW Product

- **18 A output current**
- **3.3 Vin input voltage**
- **Wide-output voltage adjust (0.8 Vdc to 2.5 Vdc)**
- **Auto-track™ sequencing***
- **Pre-bias start-up**
- **Efficiencies up to 96%**
- **Output ON/OFF inhibit**
- **Output voltage sense**
- **Vertical through-hole mounting**
- **Point-of-Load-Alliance (POLA) compatible**
- **Undervoltage lockout**
- **Available RoHS compliant**



The PTV03020 is a non-isolated dc-dc converter from Artesyn under the Point of Load Alliance (POLA) standard. The vertical mounting option of the PTV03020 module provides performance in less than 20% of the space that is required by alternative solutions. The Auto-Track™ feature provides for sequencing between multiple modules, a function, which is becoming a necessity for powering advanced silicon including DSP's, FPGA's and ASIC's requiring controlled power-up and power-down. The PTV03020 has an input voltage of 2.95 Vdc to 3.6 Vdc and offers a wide 0.8 Vdc to 2.5 Vdc output voltage range with up to 18 A output current, which allows for maximum design flexibility and a pathway for future upgrades.

2 YEAR WARRANTY

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated
C_{in} = 680 µF and 22 µF(Ceramic), C_{out} = 0 µF

SPECIFICATIONS

OUTPUT SPECIFICATIONS

Voltage adjustability	(See Note 4)	0.8-2.5 Vdc
Setpoint accuracy	(See Note 8)	±2.0% Vo
Line regulation		±5 mV typ.
Load regulation		±5 mV typ.
Total regulation	(See Note 8)	±3.0% Vo
Minimum load		0 A
Ripple and noise	20 MHz bandwidth	20 mV pk-pk
Temperature co-efficient	-40 ºC to +85 ºC	±0.5% Vo
Transient response (See Note 5)		70 µs recovery time Overshoot/undershoot 120 mV

INPUT SPECIFICATIONS

Input voltage range	(See Note 3)	2.95-3.6 Vdc
Input standby current		10 mA typ.
Remote ON/OFF	(See Note 1)	Positive logic
Undervoltage lockout	(Increasing)	2.7 V typ.
Track input current	Pin 9 (See Notes 6, 7)	-0.13 mA

GENERAL SPECIFICATIONS

Efficiency	(See Efficiency Table)	96% max.
Insulation voltage		Non-isolated
Switching frequency	250-340 kHz	300 kHz typ.
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	(L x W x H)	44.45 x 9.39 x 12.70 mm 1.75 x 0.37 x 0.50 in
Weight		5.5 g (0.19 oz)
MTBF	Telcordia SR-332	5,000,000 hours

ENVIRONMENTAL SPECIFICATIONS

Thermal performance (See Note 2)	Operating ambient, temperature	-40 ºC to +85 ºC
	Non-operating	-40 ºC to +125 ºC

PROTECTION

Overcurrent	Auto reset	35 A typ.
Overtemperature		Auto recovery

International Safety Standard Approvals

UL/cUL CAN/CSA-C22.2 No. 60950
File No. E174104

TÜV Product Service (EN60950) Certificate No. B 04 06 38572 044
CB Report and Certificate to IEC60950, Certificate No. US/8292/UL

*Auto-track™ is a trade mark of Texas Instruments

PTV03020

3.3 Vin single output

For the most current data and application support visit www.artesyn.com/powergroup/products.htm

NEW Product

OUTPUT POWER (MAX.)	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT (MIN.)	OUTPUT CURRENT (MAX.) (2)	EFFICIENCY (MAX.)	REGULATION		MODEL NUMBER (9,10)
						LINE	LOAD	
45 W	2.95-3.6 Vdc	0.8-2.5 Vdc	0 A	18 A	96%	±5 mV	±5 mV	PTV03020W

Part Number System with Options

P T V 0 3 0 2 0 W A H

Product Family
Point of Load Alliance Compatible

Mounting Version
V = Vertical

Input Voltage
03 = 3.3 V

Output Current
02 = 18 A

Mechanical Package
Always 0

Mounting Style (9)
D = Horizontal Through-Hole (Matte Sn)
H = Horizontal Through-Hole (Sn/Pb)

Pin Style
A = Through-Hole Std. Pin Length (0.150")

Output Voltage Code
W = Wide

Output Voltage Adjustment of the PTV03020 Series

The ultra-wide output voltage trim range offers major advantages to users who select the PTV03020. It is no longer necessary to purchase a variety of modules in order to cover different output voltages. The output voltage can be trimmed in a range of 0.8 Vdc to 2.5 Vdc. When the PTV03020 converter leaves the factory the output has been adjusted to the default voltage of 0.8 V

Notes

1 Remote ON/OFF. Positive logic
ON: Pin 3 open; or V > Vin - 0.5 V
OFF: Pin 3 GND; or V < 0.6 V

2 See Figure 1 for safe operating curve.

3 A 680 µF electrolytic input capacitor is required for proper operation as well as a 2 2µF high-frequency ceramic capacitor. The electrolytic capacitor must be rated for a minimum of 750 mA rms of ripple current.

4 An external output capacitor is not required for basic operation. Adding 33 0µF of distributed capacitance at the load will improve the transient response.

5 1A/µs load step, 50 to 100% I_{omax}, C3 = 330 µF.

6 If utilized Vout will track applied voltage by ±0.3 V (up to Vo set point).

7 The pre-bias start-up feature is not compatible with Auto-Track™. This is because when the module is under Auto-Track™ control, it is fully active and will sink current if the output voltage is below that of a back-feeding source. Therefore to ensure a pre-bias hold-off, one of the following two techniques must be followed when input power is first applied to the module. The Auto-Track™ function must either be disabled, or the module's output held off using the Inhibit pin. Refer to Application Note 197 for more details.

8 The set-point voltage tolerance is affected by the tolerance and stability of R_{set}. The stated limit is unconditionally met if R_{set} has a tolerance of 1% with 100/ºC or better temperature stability.

9 To order Pb-free (RoHS compatible) through-hole parts replace the mounting option 'H' with 'D', e.g. PTV03020WAD.

10 NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at http://www.artesyn.com/powergroup/products.htm to find a suitable alternative.

EFFICIENCY TABLE (I_O = 12 A)	
OUTPUT VOLTAGE	EFFICIENCY
Vo = 2.5 V	95
Vo = 1.8 V	92
Vo = 1.5 V	90
Vo = 1.2 V	88
Vo = 1.0 V	86
Vo = 0.8 V	83

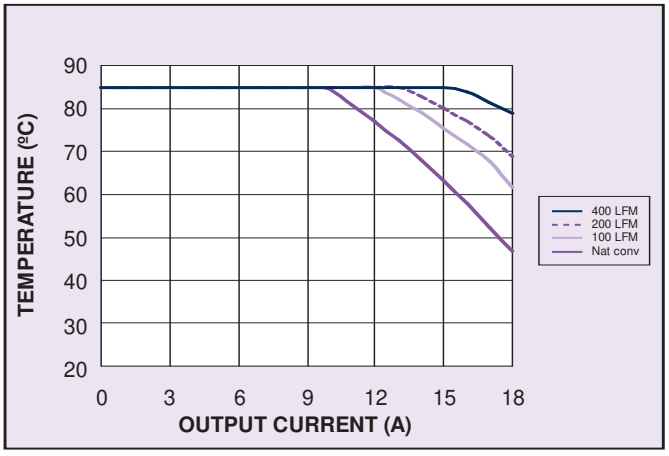


Figure 1 - Safe Operating Area
Vin = 3.3 V, Output Voltage = 2.5 V (See Note A)

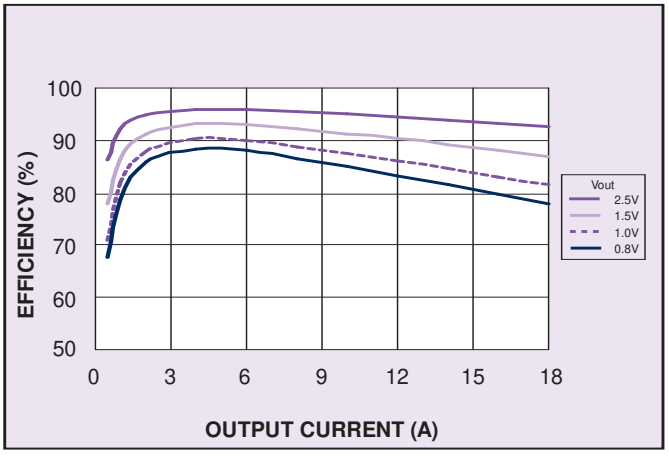


Figure 2 - Efficiency vs Load Current
Vin = 3.3 V (See Note B)

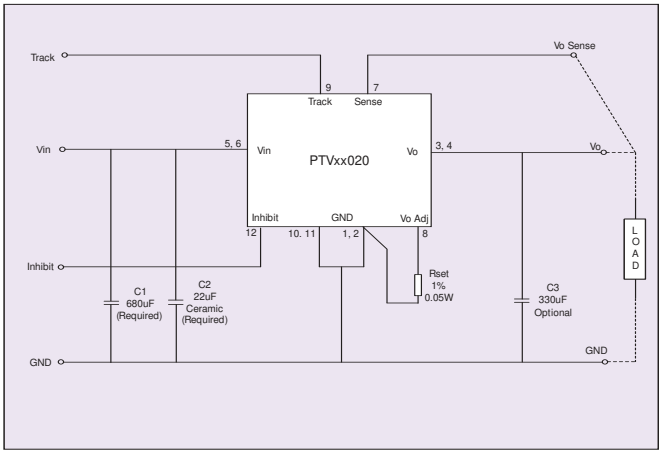
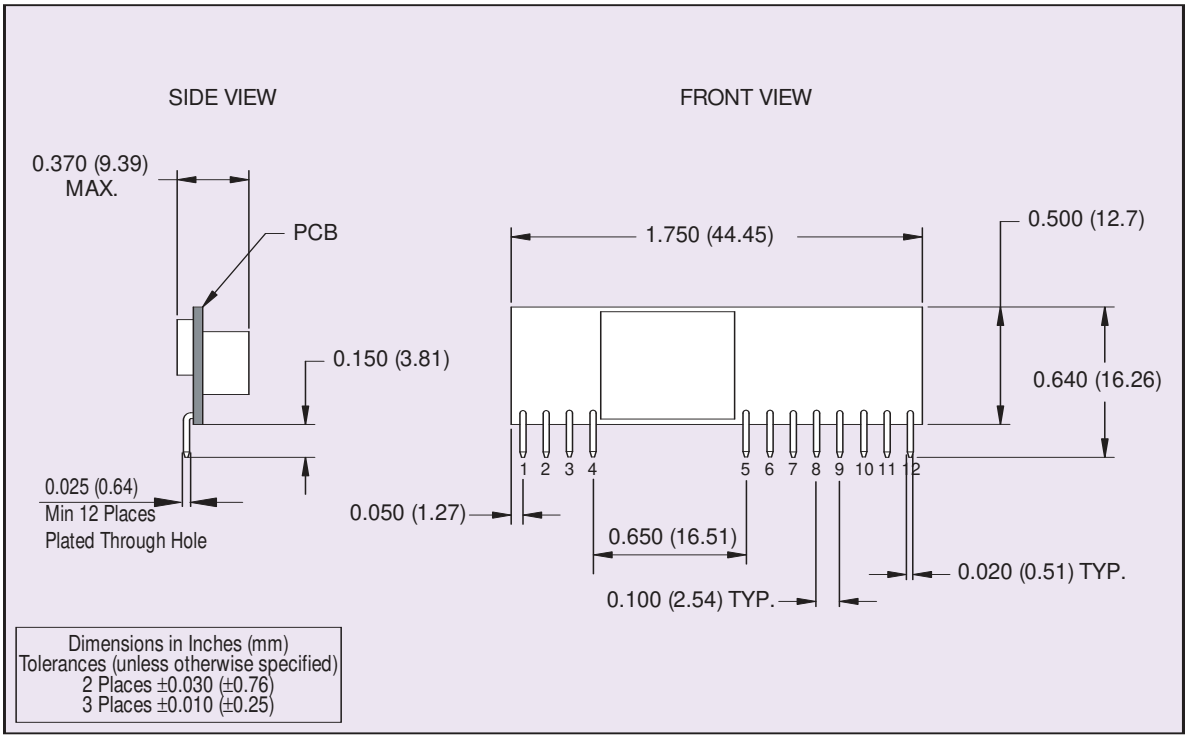


Figure 3 - Standard Application

Notes

A SOA curves represent the conditions at which internal components are within the Artesyn derating guidelines.

B Characteristic data has been developed from actual products tested at 25 °C. This data is considered typical data for the converter.



PIN CONNECTIONS	
PIN NO.	FUNCTION
1	Ground
2	Ground
3	Vout
4	Vout
5	Vin
6	Vin
7	Vo Sense
8	Vo Adjust
9	Track
10	Ground
11	Ground
12	Inhibit

Figure 4 - Mechanical Drawing and Pinout Table