ARTESYN SIL15E SERIES

Non-Isolated DC-DC Converters



Advanced Energy's Artesyn SIL15E series of non-isolated DC-DC converters comprises four SIL15E_05V models and a single SIL15_12V model.
Three of the SIL15E_05V models offer fixed output voltages of 1.8 V, 2.5 V or 3.3 V, while the fourth is a wide output trim unit that can adjusted over the range 0.8 to 3.63 Vdc. The 3.3 V fixed output model accepts a 4.5 to 5.5 Vdc input, while the other three models accept a 3 to 5.5 Vdc input. All four models can deliver up to 15 amps output current.

DATA SHEET

Total Power:

54.5 Watts

Input Voltage:

5.5 Vdc

# of Outputs:

Single

RoHS 6/6 COMPLIANT

SPECIAL FEATURES

- 15 A current rating
- Input voltage range: 3.0 - 5.5 Vdc
- Output voltage range: 0.8 - 3.63 V
- Ultra high efficiency: 95% @ 5 Vin and 3.3 Vout
- Extremely low internal power dissipation
- Minimal thermal design concerns
- Designed-in reliability: MTBF of >7 million hours per Telcordia SR-332
- Ideal solution where board space is at a premium or tighter card pitch is required
- Industry standard footprint and pinout
- Available RoHS compliant
- Two year warranty

SAFETY

- UL, cUL CAN/CSA 22.2 No. E174104
- UL6950 File No. E174104
- TÜV Product Service (EN60950) Certificate No. B 03 10 38572
- CB report and certificate to DE3-51686M1

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ELECTRICAL SPECIFICATIONS

Input		
Input voltage range		3.0 - 5.5 Vdc
Input current	No load	70 mA
Input current (max.)		11.8 A @ Io max. and Vout = 3.63 V
Input current ripple		110 mA rms
Remote ON/OFF		See Note 2
Start-up time		<20 ms
Output		
Voltage adjustability	Fixed output version Wide trim version	±10.0% 0.8 - 3.63 Vdc
Setpoint accuracy		±0.4%
Line regulation		±0.2%
Load regulation		±1.0%
Minimum load		0 A
Overshoot/undershoot		None
Ripple and noise	0 - 20 MHz BW	60 mV pk-pk 25 mV rms max.
Temperature coefficient		±0.01% / °C
Transient response		60 mV max deviation 50 µs recovery to within ±1.0%
Short circuit protection		Continuous
Thermal protection		Automatic recovery

All specifications are typical at nominal input, full load at 25°C unless otherwise stated.

GENERAL SPECIFICATIONS

Efficiency		See Table
Insulation voltage		Non-isolated
Switching frequency	Fixed	300 kHz typical
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	L x W x H	50.8 x 7.8 x 12.7 mm 2.0 x 0.31 x 0.5 inches
Pin length		0.135 ± 0.02 inches 3.43 ± 0.5 mm
Weight		5 g (0.18 oz)
MTBF	Telcordia SR-332 MIL-HDBK-217F	7,042,000 hours 680,000 hours

EMC CHARACTERISTICS

Electrostatic discharge	EN61000-4-2, IEC801-2
Conducted immunity	EN61000-4-6
Radiated immunity	EN61000-4-3

ENVIRONMENTAL SPECIFICATIONS

Thermal performance	Operating ambient temperature	-40 °C to +100 °C
(See Note 3)	Non-operating temperature	-40 °C to +125 °C

ORDERING INFORMATION

Model Number [2,5,6]	Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typical)	Regulation	
							Line	Load
SIL15E-05W3V3-VJ	54.5 W	3.0 - 5.5 Vdc	0.8 - 3.63 Vdc	0 A	15 A	94%[4]	±0.2%	±1.0%

PART NUMBER SYSTEM WITH OPTIONS

Product Family	Rated Output Current	Performance		Input Voltage	Type of Output	Output Voltage		Mounting Option	Packaging Options
SIL	15	E	-	05	W	3V3	-	V	J
SIL = Single In Line	15 = 15 Amps	E = Enhanced Performance		05 = 3 - 5.5 Vdc	W = Wide	3V3 = 3.3 V		V = Vertical H = Horizontal[5]	J = Pb free (RoHS 6/6 compliant)

OUTPUT VOLTAGE ADJUSTMENT

The ultra-wide output voltage trim range offers major advantages to users who select the SIL15E-05W3V3. 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 3.63 Vdc. When the SIL15E-05W3V3 converter leaves the factory the output has been adjusted to the default voltage of 3.3 V.

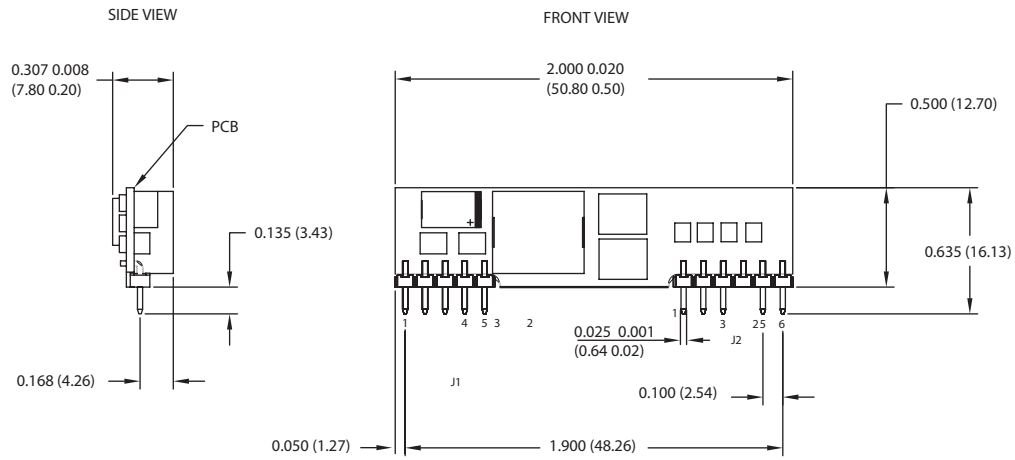
· When Vin ≥ 4.5 V, then Vout can be adjusted from 0.8 Vdc to 3.63 Vdc
· When Vin < 4.5 V, then Vout can be adjusted from 0.8 Vdc to 2.75 Vdc

Notes:
1. When Vin ≥ 4.5 V, then Vout can be adjusted from 0.8 Vdc to 3.63 Vdc.
   When Vin < 4.5 V, then Vout can be adjusted from 0.8 Vdc to 2.75 Vdc.
2. The SIL15E 5 V features a 'Negative Logic' Remote ON/OFF operation. If not using the Remote ON/OFF pin, leave the pin open (the converter will be on). The Remote ON/OFF pin is referenced to ground. The following conditions apply for the SIL15E:

Configuration	Converter Operation
Remote pin open circuit	Unit is ON
Remote pin pulled low	Unit is ON
Remote pin pulled high [Von/off >1.2 V]	Unit is OFF

   A 'Positive Logic' Remote ON/OFF version is also possible with this converter. To order please place the suffix 'R' towards the end of the model number, e.g. SIL15E-05W3V3-VRJ.
3. Full derating curves available in both the Longform Datasheet and Application Note 134.
4. When the unit is trimmed down to 0.8 V, the efficiency is 82%.
5. For horizontal mounting option please consult factory for details.
6. 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 to find a suitable alternative.

MECHANICAL DRAWINGS



Pin Assignments			
J1		J1	
Pin	Function	Pin	Function
1	+Vout	1	Ground
2	+Vout	2	+Vin
3	Remote Sense (+)	3	+Vin
4	+Vout	4	No Pin
5	Ground	5	Trim

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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ENG-SIL15E_5 SERIES-235-01 1.08