

# ARTESYN LCM300

300 Watts Bulk Front End



Advanced Energy’s Artesyn LCM300 series provide for a very wide range of AC-DC embedded power requirement. Featuring high build quality with robust screw terminals, long life, and typical full-load efficiency of greater than 91 percent, these units are ideal for use in industrial and medical applications. They are backed by a comprehensive set of industrial and medical safety approvals and certificates. Variable-speed ‘Smart Fans’ draw on software controls developed by Advanced Energy to match fan speed to the unit’s cooling requirement and load current. Slowing the fan not only saves power but also reduces wear, thus extending its life.

## SPECIAL FEATURES

- 310 W output power (360 W at 45°C for 24 V and 36 V models)
- Low cost
- 1.61” x 4.0” x 7.0”
- 7.1 W/in<sup>3</sup>
- Industrial/Medical safety
- -40°C to 70°C with derating
- Optional 5 V @ 2 A housekeeping
- High efficiency: 91% @ 230 VAC
- Variable speed “Smart Fans”
- DSP controlled
- Conformal coat option
- Wide adjustment range
- Margin programming
- OR-ing FET
- PMBus compliant

## Compliance

- EMI Class B
- EN61000 Immunity
- RoHS 3
- PMBus

## SAFETY

- UL62368-1 1598/1433 60601-1 Ed 3
- CSA 62368-1
- TUV 62368-1 60601-1
- China CCC
- CB Scheme Report/Cert
- CE and UKCA Mark

\* Note: LCM300 tested according to the medical standard IEC 60601-1-2 4th Edition.

## AT A GLANCE

### Total Power

300 W

### Input Voltage

85 to 264 VAC

### # of Outputs

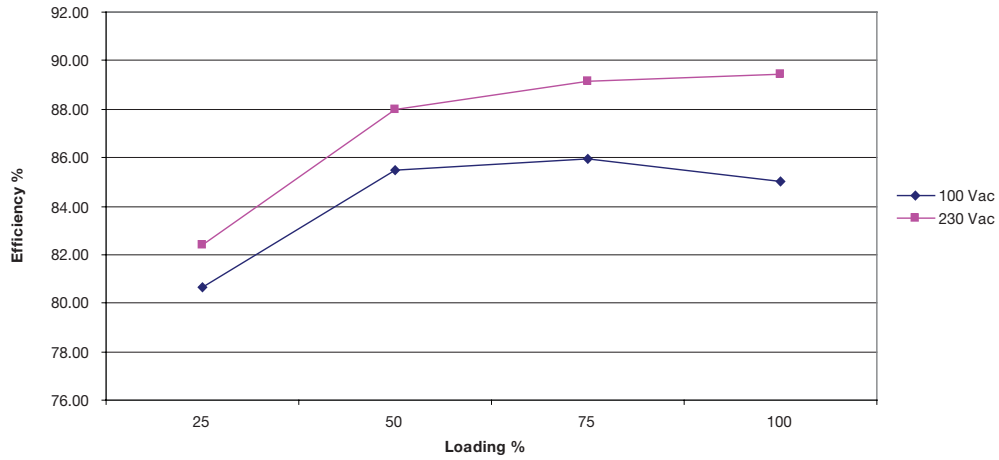
Single



ELECTRICAL SPECIFICATIONS

| Input                |  |
|----------------------|--|
| Input range          | 90 to 264 VAC (Operating)<br>115/230 VAC (Nominal)<br>TERMINAL BLOCK                               |
| Frequency            | 47 to 63 Hz, Nominal 50/60   |
| Input fusing         | Internal 8 A fuses, both lines fused   |
| Inrush current       | ≤ 20 A peak, cold start at 25°C  |
| Power factor         | 0.98 typical, meets EN61000-3-2  |
| Harmonics            | Meets IEC61000-3-2 requirements  |
| Input current        | 5 Arms max input current, at 90 VAC  |
| Hold up time         | 20 ms minimum for main O/P, at full rated load   |
| Efficiency           | > 91% typical at full load / 230 VAC nominal   |
| Leakage current      | < 0.3 mA at 240 VAC  |
| Power line transient | MOV directly after the fuse  |
| Isolation            | Isolation: PRI-Chassis 2500 VDC Basic<br>PRI-SEC 4000 VAC Reinforced 2xMOPP<br>SEC-Chassis 500 VDC |

LCM300Q Efficiency Without the 5 Vsb



## ELECTRICAL SPECIFICATIONS (CONTINUED)

| Output                       |  |   |
|------------------------------|--|---|
| Output rating                | See table 1                                | 90 to 264 VAC   |
| Set point                    | ± 0.5%                                     | 90 to 264 VAC   |
| Total regulation range       | Main output ± 2%<br>5V VSB ± 1%            | Combined line/load/transient when measured at output terminal   |
| Rated load                   | 310 W (360 W for current Q and U variants) | Derate linear to 50% from 50°C to 70°C  |
| Minimum load                 | Main output @ 0.0 A<br>5V VSB @ 0.0 A      | No loss of regulation   |
| Output noise (PARD)          | 1% max p-p<br>100 mV max p-p               | Main output<br>5V VSB output<br>Measured with a 0.1 µF Ceramic and 10 µF Tantalum Capacitor on any output, 20 MHz                               |
| Output voltage overshoot     |  | No overshoot/undershoot outside the regulation band during on or off cycle  |
| Transient response           | < 300 µSec                                 | 50% load step @ 1 A/µs<br>Step load valid between 10% to 100% of output rating<br>Recovery time to within 1% of set point at onset of transient |
| Max units in parallel        |  | Up to 10  |
| Short circuit protection     | Protected, no damage to occur              | Bounce mode   |
| Remote sense                 |  | Compensation up to 500 mV   |
| Forced load sharing          | To within 10% of all shared outputs        | Analog sharing control  |
| Overload protection (OCP)    | 105% to 125%<br>120% to 170%               | Main output<br>5V VSB output  |
| Overvoltage protection (OVP) | 125% to 145%<br>110% to 125%               | 12 V output<br>5V VSB output  |

## ENVIRONMENTAL SPECIFICATIONS

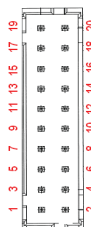
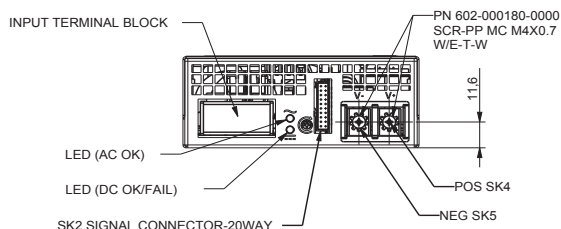
|                       |   |
|-----------------------|---|
| Operating temperature | -40°C to +70°C, linear derating to 50% from 50°C to 70°C              |
| Storage temperature   | -40°C to +85°C  |
| Humidity              | 10 to 90%, non-condensing. Operating. Conformal coat option available |
| Fan noise             | < 45 dBA, 80% load at 40°C; Fan Off when unit is inhibited            |
| Altitude              | Operating, 10,000 feet (3048 m)<br>Storage, 30,000 feet               |
| Shock                 | MIL-STD-810F 516.5, Procedure I, VI. Storage                          |
| Vibration             | MIL-STD-810F 514.5, Cat. 4, 10. Storage                               |

ORDERING INFORMATION

| Model Number | Output | Nominal Output Voltage Set Point | Set Point Tolerance | Adjustment Range | Current |        | Output Ripple P/P (0-50 °C) | Max Continuous Power <sup>1</sup> | Combined Line/Load Regulation |
|--------------|--------|----------------------------------|---------------------|------------------|---------|--------|-----------------------------|-----------------------------------|-------------------------------|
|              |        |                                  |                     |                  | Min     | Max    |                             |                                   |                               |
| LCM300L      | 12 V   | 12 V                             | ± 0.5%              | 9.6 - 14.4 V     | 0 A     | 25.0 A | 120 mV                      | 310 W                             | 2%                            |
| LCM300N      | 15 V   | 15 V                             | ± 0.5%              | 14.25 - 19.5 V   | 0 A     | 20.0 A | 150 mV                      | 310 W                             | 2%                            |
| LCM300Q      | 24 V   | 24 V                             | ± 0.5%              | 19.2 - 28.8 V    | 0 A     | 14.5 A | 240 mV                      | 360 W                             | 2%                            |
| LCM300U      | 36 V   | 36 V                             | ± 0.5%              | 28.8 - 43.2 V    | 0 A     | 9.7 A  | 360 mV                      | 360 W                             | 2%                            |
| LCM300W      | 48 V   | 48 V                             | ± 0.5%              | 43.0 - 60.0 V    | 0 A     | 6.3 A  | 480 mV                      | 310 W                             | 2%                            |

Note 1: Max continuous power includes 5 V @ 2 A standby power if the optional standby output is available.

| LCMXXXXY                         | -  | A                  | - | B                | - | C                  | - | ###                                     |
|----------------------------------|----|--------------------|---|------------------|---|--------------------|---|---|
| Case Size                        |    | Input Termination  |   | Acoustic Noise   |   | Option Codes       |   | Hardware Code                           |
| 1-Phase input where XXXX =       |    |                    |   |                  |   |                    |   |   |
| 300 = 1.61" x 4.0" x 7.0", 300 W |    |                    |   | Blank = Standard |   | Blank = No Options |   | Factory Assigned for Modified Standards |
|                                  |    | T = Terminal Block |   |                  |   | 1 = Conformal Coat |   |   |
| Voltage Code Y =                 |    |                    |   |                  |   | 4 = 5 V Standby    |   |   |
| Code                             |    |                    |   |                  |   | 5 = Opt 1 + 4      |   |   |
| L                                | 12 |                    |   |                  |   |                    |   |   |
| N                                | 15 |                    |   |                  |   |                    |   |   |
| Q                                | 24 |                    |   |                  |   |                    |   |   |
| U                                | 36 |                    |   |                  |   |                    |   |   |
| W                                | 48 |                    |   |                  |   |                    |   |   |



Signal Output Signal Connectors (SK2)

SK2 Mating Connector: JST Part Number PHDR-20VS;  
Contact Pins: JST Part Number SPHD-001T-P0.5

LED INDICATORS

2 provided are clearly visible up to a 45 degree offset from vertical with office environment ambient lighting. The status is reflected in the indicator color.

The DC\_OK LED LED shall light green if the DC output is within specification, and should be off if the output falls out of specification.

The AC\_OK LED LED is green if the AC is within specification and off when out of specification. Note: With 5 V standby, Green also indicates that PSU is in standby mode/output off.

CONTROL SIGNALS

AC\_OK Open collector 0.5 V maximum at 10 mA. Both emitter and collector access provided.

DC\_OK Open collector 0.5 V maximum at 10 mA. Both emitter and collector access provided.

DC\_OK will de-assert when output is loss due to OCP, OVP, OTP, or Fan Fault (for -N option).

PS\_INHIBIT/ENABLE Signal 0.0 to 0.5 V contact closure, output OFF (output ON for LCM300U-T-4-401).

**PIN ASSIGNMENT**

| Signals  | Name Description   | Pin Number(s) |               |
|----------|--|---------------|---------------|
| +Vout    | Power rail   | SK4           |               |
| GND      | Power GND  | SK5           |               |
| Signals  | Name Description   | Amps per pin  | Pin Number(s) |
| A2       | EEPROM address   |               | 1             |
| -VPROG   | Return connection of external supply for Margin Programming        |               | 2             |
| A1       | EEPROM address   |               | 3             |
| -Vsense  | Remote sense return  |               | 4             |
| ISHARE   | Load share voltage   |               | 5             |
| A0       | EEPROM address   |               | 6             |
| SDA1     | Serial data signal (I <sup>2</sup> C)                              |               | 7             |
| +VPROG   | Positive connection of external supply for Margin Programming      |               | 8             |
| SCL1     | Serial clock signal (I <sup>2</sup> C)                             |               | 9             |
| +Vsense  | Remote sense positive  |               | 10            |
| 5VSB     | 5V standby   | 2 A           | 11            |
| GND      | 5V standby return  | 2 A           | 12            |
| 5VSB     | 5V standby   | N/A           | 13            |
| G_DCOK_C | Global DCOK collector  |               | 14            |
| GPIOA6   | EEPROM write protect   |               | 15            |
| G_DCOK_E | Global DCOK emitter (GND)  |               | 16            |
| GND      | Return ground for output signal and I <sup>2</sup> C communication |               | 17            |
| G_ACOK_C | Global ACOK collector  |               | 18            |
| INH_EN   | Turn Off main output   |               | 19            |
| G_ACOK_E | Global ACOK emitter (GND)  |               | 20            |

Note: Mating connector for SK2 is:

LANDWIN: PN 2050S2000 Housing and PN 2053T021V Contact

CIVILUX: PN CI0120SD000 Housing and PN CI01TD21PE0 Contact

MECHANICAL DRAWINGS

Weight: 1.76 lbs (0.8 Kg)

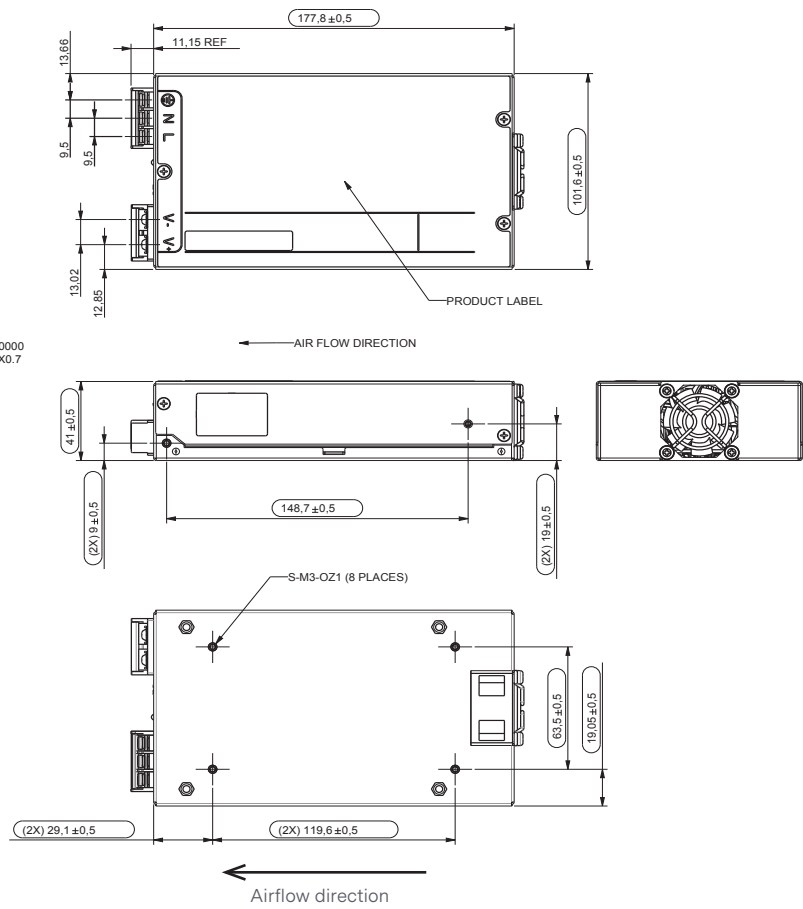
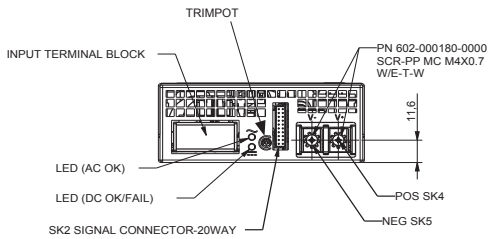
MOUNTING LOCATIONS SCREW PENETRATION DEPTH IS 3.0 mm MAX.

RECOMMENDED SCREW TORQUE:

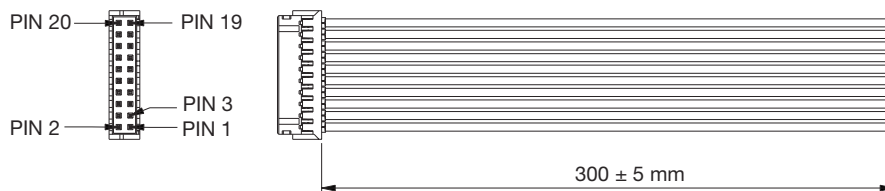
M3 x 0.5P = 6.4 - 8kgf-cm

M3.5 x 0.6P = 6 - 8kgf-cm

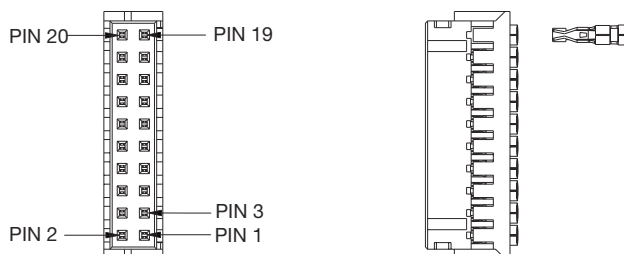
M4.0 x 0.7P = 8 - 10kgf-cm



ACCESSORIES



Order kit part number 73-788-001 for control connector interface with 0.3 m wires attached



Order kit part number 73-788-002 for control connector interface with unloaded housing and 20 pins

MISCELLANEOUS SPECIFICATIONS

**Burn-In**

100% Burn-in at 45°C, at 80 to 90% load. Duration of burn-in determined by Quality Assurance Procedures.

**MTBF**

The power supply has a minimum MTBF of 300K hours using the Bell core 332, issue 6 specification @ 25°C and 40°C, ambient, at full load. With the power supply installed in a system in a 25°C ambient environment and operating at full load, capacitor life shall be 5 years at 50°C, minimum for ALL electrolytic capacitors contained within this power supply. The power supply shall demonstrate a MTBF level of > 500,000 hours.

**Quality Assurance**

Full QAV testing shall be conducted in accordance with Advanced Energy Standards.

**Warranty**

Advanced Energy shall warrant the power supply to be free of defects in materials and workmanship for a minimum period of three years from the date of shipment, when operated within specifications. The warranty shall be fully transferable to the end owner of the equipment powered by the supply.



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## 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.

**PRECISION | POWER | PERFORMANCE | TRUST**

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