

# ARTESYN INTELLIGENT MP SERIES

Up to 1500 Watts



**iMP™**

**PMBus®**  
Power Management.  
Defined.

Advanced Energy's Artesyn iMP series is an AC input to DC output configurable power system consisting of a microprocessor-controlled PFC front end providing seven slots that accept intelligent DC-DC converter modules with single, dual or triple outputs ranging from 2 V to 60 V. Single output modules come in four power ranges that can be mixed and matched and connected in parallel or series to obtain thousands of output combinations customized to any application.

## SPECIAL FEATURES

- Full medical EN60601 approval
- Intelligent I<sup>2</sup>C control
- Voltage adjustment on all outputs (manual or I<sup>2</sup>C)
- Configurable input and output OK signals and indicators
- Configurable inhibit/enable
- Configurable output UP/DOWN sequencing
- Configurable current limit (foldback or constant current)
- High power density (8.8 W/cu-in)
- Intelligent fan (speed control/fault status)
- Downloadable GUI from website
- Customer provided air option
- uP controlled PFC input with active inrush protection
- I<sup>2</sup>C monitor of voltage, current, and temp
- Programmable voltage, current limit, inhibit/enable through I<sup>2</sup>C

- Optional extended hold-up module (SEMI F47 compliance)
- Increased power density to 50% over standard MP
- External switching frequency sync input
- Optional conformal coating
- Industrial temp range (-40°C to 70°C)
- No preload required
- Industrial shock/vibration (> 50G's)

## SAFETY

- UL UL60950/UL2601\*\*
- CSA CSA22.2 No. 234 Level 5
- TUV EN60950/EN60601-1\*\*
- BABT Compliance to EN60950/EN60601 BS7002
- CB Certificate and report
- CE Mark to LVD

## AT A GLANCE

### Total Power

Up to 1500 W

### Input Voltage

85 to 264 VAC  
120 to 300 VDC

### # of Outputs

Up to 21

## ELECTRICAL SPECIFICATIONS

| Input                   |                                                                                                                                                                               |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input range             | 85 to 264 VAC; 120 to 300 VAC<br>(limited to 300 VDC in medical applications)                                                                                                 |
| Frequency               | 47 to 63 Hz (iMP1 47 to 440 Hz)                                                                                                                                               |
| Inrush current          | 40 A peak maximum (soft start)                                                                                                                                                |
| Efficiency              | Up to 85% @ full case load                                                                                                                                                    |
| Power Factor            | 0.99 typ. meets EN61000-3-2 (n/a @ 440 Hz)                                                                                                                                    |
| Turn-on time            | AC on 2.0 sec typ., inhibit/enable 150 ms typical<br>Programmable delay; 50 ms internal turn-on delay (Dual Output only)                                                      |
| EMI filter              | CISPR 22/EN55022 Level "B"***                                                                                                                                                 |
| Leakage current         | 300 $\mu$ A max. @ 240 VAC; 47 - 63 Hz                                                                                                                                        |
| Radiated EMI            | CISPR 22/EN55022 Level "B"***                                                                                                                                                 |
| Holdover storage        | 20 ms minimum (independent of input Vac) additional 34 ms holdover<br>storage with optional HUP module (SEMI F47 compatible).<br>For iMP4 15 ms (low-line), 10 ms (high-line) |
| AC OK                   | > 5 ms early warning min. before outputs lose regulation<br>Full cycle ride thru (50 Hz) (n/a on iMP4 > 750 W @ 90 VAC)                                                       |
| Harmonic distortion     | Meets EN61000-3-2                                                                                                                                                             |
| Isolation               | Meets EN60950 and EN60601<br>Input to output: 4000 Vac; input to ground: 1500 Vac; output to ground: 400 Vdc<br>Meets 1 MOPP Primary to ground, 2 MOPP Primary to Secondary   |
| Global inhibit / enable | TTL, Logic "1" and Logic "0"; configurable                                                                                                                                    |
| Input fuse (internal)   | iMP4: 16 A; iMP8: 20 A; iMP1: 25 A (both lines fused)                                                                                                                         |
| Warranty                | 2 years                                                                                                                                                                       |

## ELECTRICAL SPECIFICATIONS (CONTINUED)

| Output                                   |                                                                                                                                                                                                                                      |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adjustment range*                        | ± 10% minimum all outputs (manual)<br>(full module adjustment range using I <sup>2</sup> C)                                                                                                                                          |
| Factory set point accuracy               | 1%                                                                                                                                                                                                                                   |
| I <sup>2</sup> C output program accuracy | ± 5%                                                                                                                                                                                                                                 |
| Margining                                | ± 4 - 6% nominal analog (single output module only)                                                                                                                                                                                  |
| Overall regulation                       | 0.4% or 20 mV max. (1500 W modules 1% max.) (36 W modules 4% maximum)                                                                                                                                                                |
| Ripple                                   | RMS: 0.1% or 10 mV, whichever is greater<br>Pk-Pk: 1.0% or 50 mV, whichever is greater<br>Bandwidth limited to 20 MHz                                                                                                                |
| Dynamic response                         | < 2% or 100 mV, with 25% load step                                                                                                                                                                                                   |
| Recovery time                            | To within 1% in < 300 µsec                                                                                                                                                                                                           |
| Overcurrent protection**                 | Configurable through I <sup>2</sup> C (calibration required). Single output module and main output of the dual output module 105 - 120% of rated output current. Aux output of dual output module 105 - 140% of rated output current |
| Short-circuit protection                 | Protected for continuous short-circuit.<br>Recovery is automatic upon removal of short                                                                                                                                               |
| Overvoltage protection*                  | Configurable through I <sup>2</sup> C                                                                                                                                                                                                |
|                                          | Single output module: 2 to 5.5 V 122 to 134%; 6 to 60 V 110 to 120%                                                                                                                                                                  |
|                                          | Dual output module: 2 to 6 V 122 to 134%; 8 to 28 V 110 to 120%                                                                                                                                                                      |
|                                          | Triple output module: 110 - 120% of highest voltage rating                                                                                                                                                                           |
| Thermal protection*<br>(OTP and OTW)     | Configurable through I <sup>2</sup> C<br>All outputs disabled when internal temp exceeds safe operating range. > 5 ms warning (AC OK signal) before shutdown                                                                         |
| Remote sense                             | Up to 0.5 V total drop (not available on triple output module)                                                                                                                                                                       |
| Single wire parallel                     | Current share to within 2% of total rated current                                                                                                                                                                                    |
| DC OK*                                   | ± 5% of nominal. Configurable through I <sup>2</sup> C                                                                                                                                                                               |
| Minimum load                             | Not required                                                                                                                                                                                                                         |
| Housekeeping bias voltage                | 5 Vdc @ 1.0 A max. present whenever AC input is applied (Optional 2.0 A available)                                                                                                                                                   |
| Module inhibit*                          | Configured and controlled through I <sup>2</sup> C                                                                                                                                                                                   |
| Switching frequency                      | 250k Hz accepts external sync signal                                                                                                                                                                                                 |
| Output/Output isolation                  | > 1 Megohm, 500 V                                                                                                                                                                                                                    |
| External sync                            | TTL clock input signal used to adjust switching frequency. Frequency 500 kHz<br>± 20%; Duty cycle 40 - 55%                                                                                                                           |

\* Can be controlled via I<sup>2</sup>C\*\* Controlled via I<sup>2</sup>C but requires load calibration

## INTERNAL PART NUMBER REFERENCE TABLE

| Part #       | Description | Case Code |
|--------------|-------------|-----------|
| 73-580-0001i | iMP8 Case   | iMP8      |
| 73-690-0001i | iMP1 Case   | iMP1      |
| 73-540-0001i | iMP4 Case   | iMP4      |

## ENVIRONMENTAL SPECIFICATIONS

|                                |                                                                                                    |
|--------------------------------|----------------------------------------------------------------------------------------------------|
| Operating temperature          | -40 °C to 70 °C ambient. Derate each output 2.5% per degree from 50 °C to 70 °C. (-20 °C start up) |
| Storage temperature            | -40 °C to +85 °C                                                                                   |
| Electromagnetic susceptibility | Designed to meet EN61000-4; -2, -3, -4, -5, -6, -8, -11 Level 3                                    |
| Humidity                       | Operating; non-condensing 10% to 95% RH                                                            |
| Vibration                      | IEC68-2-6 to the levels of IEC721-3-2                                                              |
| MTBF demonstrated              | > 550,000 hours at full load, 220 Vac and 25 °C ambient conditions                                 |

## OUTPUT MODULE LINE-UP

| Module Code                               | 1         | 2         | 3         | 5         | 4         |     | —         |
|-------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----|-----------|
| Module Type                               | Single    | Single    | Single    | Single    | Dual      |     | Triple    |
| Max output power                          | 210 W     | 360 W     | 750 W     | 1500 W    | 144 W     |     | 36 W      |
| Max output current                        | 35 A      | 60 A      | 150 A     | 300 A     | 10 A      |     | 2 A       |
| Output voltages available                 | 2 to 60 V | 2 to 60 V | 2 to 60 V | 2 to 60 V | 2 to 28 V |     | 2 to 28 V |
| Standard voltage increments               | 25        | 25        | 25        | 18        | 16        |     | 18        |
|                                           |           |           |           |           | V1        | V2  | V1,V2,V3  |
| Remote sense                              | Yes       | Yes       | Yes       | Yes       | Yes       | Yes | No        |
| Remote margin                             | Yes       | Yes       | Yes       | Yes       | No        | No  | No        |
| V-Program - I <sup>2</sup> C Control      | Yes       | Yes       | Yes       | Yes       | Yes       | Yes | No        |
| Active Current Share                      | Yes       | Yes       | Yes       | Yes       | Yes       | No  | No        |
| Module Inhibit - I <sup>2</sup> C Control | Yes       | Yes       | Yes       | Yes       | Yes       | Yes | Yes       |
| Module Inhibit - Analog                   | Yes       | Yes       | Yes       | Yes       | Yes       | No  | No        |
| Overvoltage/Overcurrent protection        | Yes       | Yes       | Yes       | Yes       | Yes       | Yes | Yes       |
| Minimum load required                     | No        | No        | No        | No        | No        | No  | No        |
| Slots occupied in any iMP case            | 1         | 2         | 3         | 4         | 1         |     | 1         |

## OUTPUT MODULE VOLTAGE/CURRENT\*

| Voltage                | Voltage Code | Single Output Module Code |        |        |         | Dual Output** |       | Triple Output |       |       | I <sub>C</sub> Adjustment Ranges*** |
|------------------------|--------------|---------------------------|--------|--------|---------|---------------|-------|---------------|-------|-------|-------------------------------------|
|                        |              | 1                         | 2      | 3      | 5       | 4             | 4     | -             | -     | -     |                                     |
| 2 V                    | A            | 35 A                      | 60 A   | 150 A  | 300 A   | 10 A          | 10 A  | —             | —     | 2 A   | 1.8 - 2.2                           |
| 2.2 V                  | B            | 35 A                      | 60 A   | 150 A  | 300 A   | 10 A          | 10 A  | —             | —     | 2 A   | 2.0 - 2.4                           |
| 3 V                    | C            | 35 A                      | 60 A   | 150 A  | 300 A   | 10 A          | 10 A  | —             | —     | 2 A   | 2.7 - 3.3                           |
| 3.3 V                  | D            | 35 A                      | 60 A   | 150 A  | 300 A   | 10 A          | 10 A  | —             | —     | 2 A   | 3.0 - 3.6                           |
| 5 V                    | E            | 35 A                      | 60 A   | 150 A  | 300 A   | 10 A          | 10 A  | —             | —     | 2 A   | 4.5 - 5.5                           |
| 5.2 V                  | F            | 35 A                      | 60 A   | 144 A  | 288 A   | 10 A          | 10 A  | —             | —     | 2 A   | 4.7 - 5.7                           |
| 5.5 V                  | G            | 34 A                      | 58 A   | 136 A  | 273 A   | 10 A          | 10 A  | —             | —     | 2 A   | 5.0 - 6.1                           |
| 6.0 V                  | H            | 23 A                      | 42 A   | 97.5 A | 250 A   | 10 A*         | 10 A* | —             | —     | 2 A   | 5.4 - 6.6                           |
| 8.0 V                  | I            | 20 A                      | 36 A   | 84.4 A | 187.5 A | 10 A          | 4 A   | 1 A           | 1 A   | 1 A   | 7.2 - 8.8                           |
| 10 V                   | J            | 18 A                      | 32 A   | 75 A   | 140 A   | 10 A          | 4 A   | 1 A           | 1 A   | 1 A   | 9.0 - 11.0                          |
| 11 V                   | K            | 17 A                      | 31 A   | 68 A   | 136.3 A | 10 A          | 4 A   | 1 A           | 1 A   | 1 A   | 9.9 - 12.1                          |
| 12 V                   | L            | 17 A                      | 30 A   | 62.5 A | 125 A   | 10 A          | 4 A   | 1 A           | 1 A   | 1 A   | 10.8 - 13.2                         |
| 14 V                   | M            | 14 A                      | 21 A   | 53.5 A | 107 A   | 9 A           | 4 A   | 1 A           | 1 A   | 1 A   | 12.6 - 15.4                         |
| 15 V                   | N            | 14 A                      | 20 A   | 50 A   | 100 A   | 8 A           | 4 A   | 1 A           | 1 A   | 1 A   | 13.5 - 16.5                         |
| 18 V                   | O            | 11 A                      | 19 A   | 41.6 A | 83.3 A  | —             | —     | —             | 0.5 A | 0.5 A | 16.2 - 19.8                         |
| 20 V                   | P            | 10.5 A                    | 18 A   | 37.5 A | 75 A    | —             | —     | —             | 0.5 A | 0.5 A | 18.0 - 22.0                         |
| 24 V                   | Q            | 8.5 A                     | 15 A   | 30 A   | 62.5 A  | 4 A           | 2 A   | —             | 0.5 A | 0.5 A | 21.6 - 26.4                         |
| 28 V                   | R            | 6.7 A                     | 11 A   | 26.8 A | 53.5 A  | 3 A           | 2 A   | —             | 0.5 A | 0.5 A | 25.2 - 30.8                         |
| 30 V                   | S            | 6.5 A                     | 11 A   | 25 A   | 50 A    | —             | —     | —             | —     | —     | 27.0 - 33.0                         |
| 33 V                   | T            | 6.2 A                     | 10.9 A | 22.7 A | 35.8 A  | —             | —     | —             | —     | —     | 29.7 - 36.3                         |
| 36 V                   | U            | 5.8 A                     | 10 A   | 20.8 A | 35.8 A  | —             | —     | —             | —     | —     | 32.4 - 39.6                         |
| 42 V                   | V            | 4.2 A                     | 7.5 A  | 16 A   | 35.7 A  | —             | —     | —             | —     | —     | 37.8 - 46.2                         |
| 48 V                   | W            | 4.0 A                     | 7.5 A  | 15.6 A | 31.2 A  | —             | —     | —             | —     | —     | 43.2 - 52.8                         |
| 54 V                   | X            | 3.7 A                     | 6.0 A  | 13.9 A | 27.7 A  | —             | —     | —             | —     | —     | 48.6 - 59.4                         |
| 60 V                   | Y            | 3.5 A                     | 6.0 A  | 12.5 A | 25 A    | —             | —     | —             | —     | —     | 54.0 - 66.0                         |
| <b>Contact Factory</b> |              |                           |        |        |         |               |       |               |       |       |                                     |
| Special*               | Z            | 35 A                      | 60 A   | 150 A  | 300 A   | —             | 10 A  |               |       |       | 2.3 - 2.6                           |
| Special*               | Z            | 35 A                      | 60 A   | 150 A  | 300 A   | —             | 10 A  |               |       |       | 3.7 - 4.4                           |
| Special*               | Z            | 20 A                      | 36 A   | 80 A   | 140 A   | —             | 8 A   |               |       |       | 6.7 - 7.1                           |

\* Increments of current not shown can be achieved by paralleling modules (add currents of each module selected).

\*\*Total output power on dual model must not exceed 144 W.

\*\*\* For single output modules only.

Bold black lines reference lines indicate physical module groupings

## OUTPUT MODULE VOLTAGE/CURRENT\* (CONTINUED)

## Parallel Codes

|        |        |        |        |        |        |        |                         |
|--------|--------|--------|--------|--------|--------|--------|-------------------------|
| Slot 7 | Slot 6 | Slot 5 | Slot 4 | Slot 3 | Slot 2 | Slot 1 | iMP4<br>available slots |
| Slot 6 | Slot 5 | Slot 4 | Slot 3 | Slot 2 | Slot 1 |        | iMP8<br>available slots |
| Slot 5 | Slot 4 | Slot 3 | Slot 2 | Slot 1 |        |        | iMP1<br>available slots |
| 7      | 6      | 5      | 4      | 3      | 2      | 1      |                         |
| •      | •      | •      | •      | •      | •      | •      | 0 = no parallel         |
| •      | •      | •      | •      | •      | •      | •      | 1 = 1 & 2               |
| •      | •      | •      | •      | •      | •      | •      | 2 = 2 & 3               |
| •      | •      | •      | •      | •      | •      | •      | 3 = 3 & 4               |
| •      | •      | •      | •      | •      | •      | •      | 4 = 4 & 5               |
| •      | •      | •      | •      | •      | •      | •      | 5 = 3 & 4 & 5           |
| •      | •      | •      | •      | •      | •      | •      | 6 = 5 & 6               |
| •      | •      | •      | •      | •      | •      | •      | 7 = 4 & 5 & 6           |
| •      | •      | •      | •      | •      | •      | •      | 8 = 6 & 7               |
| •      | •      | •      | •      | •      | •      | •      | 9 = 3 & 4, 6 & 7        |
| •      | •      | •      | •      | •      | •      | •      | A = 1 & 2, 3 & 4, 5 & 6 |
| •      | •      | •      | •      | •      | •      | •      | C = 2 & 3, 4 & 5        |
| •      | •      | •      | •      | •      | •      | •      | E = 3 & 4, 5 & 6        |
| •      | •      | •      | •      | •      | •      | •      | F = 2 & 3, 4 & 5, 6 & 7 |

## Ordering Notes

1. The cases and modules of both MP and iMP series can be inter-changed to allow more flexibility. If intelligent modules are used with non-intelligent cases, a numeric code "4" is placed at the end of the module code (ex. 4LL0 becomes 4LL4).
2. USB to I<sup>2</sup>C module order code 73-769-001

## ORDERING INFORMATION

| Case Size                                                                                                                                                                                                                                       | Module/Voltage/Option Codes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Case Option Codes                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Software Code                                                | Hardware Code                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------|
|                                                                                                                                                                                                                                                 | First - Module Code<br>Second - Voltage Code<br>Third - Option Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                              |                                                  |
| <b>iMP1*</b>                                                                                                                                                                                                                                    | <b>3L0 - 2E2 - 1Q1 - 4LL0</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>00</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>A</b>                                                     | <b>###</b>                                       |
| <b>Case Size (mm)</b><br>4 = 2.5" x 5" x 10"; 750 W - 1158 W, 5 Slots (63.5 x 127 x 254 mm)<br>8 = 2.5" x 7" x 10"; 1000 W - 1200 W, 6 Slots (63.5 x 177.8 x 254 mm)<br>1 = 2.5" x 8" x 11"; 1200 W - 1500 W, 7 Slots (63.5 x 203.2 x 279.4 mm) | <b>Module Codes</b><br>Module/voltage/option codes<br>Module codes:<br>(None) = 36 W triple O/P (1 slot)<br>1 = 210 W single O/P (1 slot)<br>2 = 360 W single O/P (2 slot)<br>3 = 750 W single O/P (3 slot)<br>4 = 144 W dual O/P (1 slot)<br>5 = 1500 W single O/P (4 slot)<br>6 - 9 = future<br><b>Voltage Codes:</b><br>See Output Module Voltage/Current table above<br><b>Option Codes:</b><br>0 = Standard<br>1 = Module enable<br>2 = Constant current<br>3 = 1 & 2 combined<br>4 = Set for use in standard (non-intelligent case)<br>5 = Shutdown mode for 1500 W<br>6 = 1 & 5 combined<br>7 - 9 = future | <b>Case Option Codes</b><br>First digit<br>0 - 9, A - Z parallel code (See Parallel Codes table above)<br>Second digit<br>0 = No options<br>1 = Reverse air<br>3 = Global enable<br>4 = Fan idle with inhibit<br>5 = Opt 1 + Opt 3<br>6 = Opt 1 + Opt 4<br>7 = Opt 3 + Opt 4<br>8 = Opt 1 + 3 + 4<br>9 = RS485 73-544-002<br>A = RS485 73-544-002 + Reverse air<br>C = Opt 3 + Opt 9<br>D = CAN BUS 73-544-003<br>E = Opt 3 + Opt D<br>F = RS485 - MODBUS 73-544-005 | Software code used for configuration change. "A" is standard | Factory assembled for hardware of firmware mods. |

\* Note: Add "E" after iMP4 to denote IEC input option.  
e.g. iMP4E (Not available on iMP8 or iMP1)

ORDERING INFORMATION (CONTINUED)

Single



210 W



360 W



750 W



1500 W ( 2.0 to 8.0



1500 W ( 10 to 60 V)

1500 W with Bus Bar  
Adapter Option (used with  
the 10 to 60 V module)



iMP4 (AC input on opposite side)



iMP4 = 2.5" x 5" x 10" 5 available slots  
(63.5 x 127 x 254 mm)

| Input        |               |
|--------------|---------------|
| 90 - 264 Vac | 180 - 264 Vac |
| 750 W max.   | 1158 W max.   |

iMP8 and iMP1



iMP1 only

iMP8 = 2.5" x 7" x 10" 6 available slots  
(63.5 x 177.8 x 254 mm)

| Input        |               |
|--------------|---------------|
| 85 - 264 Vac | 180 - 264 Vac |
| 1000 W max.  | 1200 W max.   |

iMP1 = 2.5" x 8" x 11" 7 available slots  
(63.5 x 203.2 x 279.4 mm)

|             |             |
|-------------|-------------|
| 1200 W max. | 1500 W max. |
|-------------|-------------|

Dual



144 W

Triple



36 W

PIN CONNECTORS

Figure 1. AC Input

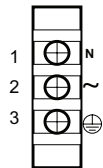
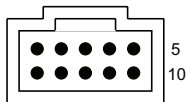
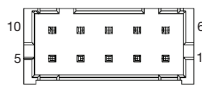


Figure 2. Connector J1



Mates with  
Molex 90142-0010 Housing  
90119-2110 Pin  
Advanced Energy Connector Kit  
PN: 70-841-004  
Sager Electronics cable assembly  
PN: 2174500059

Figure 3. Connector J2



Mates with  
Landwin 2050S1000 Housing  
2053T011V Pin  
or  
JST PHDR-10VS Housing  
JST SPHD-002T-P0.5 (28-24)  
JST SPHD-001T-P0.5 (26-22)  
  
Advanced Energy Connector Kit  
PN: 70-841-023  
Sager Electronics cable assembly  
PN: 2174500058

| AC Input                                  |                                          |
|-------------------------------------------|------------------------------------------|
| Pin No.                                   | Function                                 |
| 1                                         | AC neutral                               |
| 2                                         | AC line (hot)                            |
| 3                                         | Chassis (earth) ground                   |
| PFC Input Connector (Control and signals) |                                          |
| Pin No.                                   | Function                                 |
| 1                                         | Input AC OK - "emitter"                  |
| 2                                         | Input AC OK - "collector"                |
| 3                                         | Global DC OK - "emitter"                 |
| 4                                         | Global DC OK - "collector"               |
| 5                                         | External Sync                            |
| 6                                         | Global inhibit/optional enable logic "0" |
| 7                                         | Global inhibit/optional enable logic "1" |
| 8                                         | Global inhibit/optional enable return    |
| 9                                         | +5 VSB housekeeping                      |
| 10                                        | +5 VSB housekeeping return               |
| I <sup>2</sup> C Bus Output Connector     |                                          |
| Pin No.                                   | Function                                 |
| 1                                         | No connection                            |
| 2                                         | No connection                            |
| 3                                         | No connection                            |
| 4                                         | Serial clock signal (SCL)                |
| 5                                         | Serial data signal (SDA)                 |
| 6                                         | Address bit 0 (A0)                       |
| 7                                         | Address bit 1 (A1)                       |
| 8                                         | Address bit 2 (A2)                       |
| 9                                         | Secondary return (GND)                   |
| 10                                        | 5 Vcc external bus (5 VCC. Bus)          |

## MECHANICAL DRAWINGS

## iMP Modules

## DC-DC Converter Output Modules

| Control Signal Information, J1 Control Connector |                             |                           |
|--------------------------------------------------|-----------------------------|---------------------------|
| Pin No.                                          | Function                    |                           |
| 1                                                | + Remote Sense              | single or dual o/p main   |
| 2                                                | Remote Margin / V. Program  | single o/p                |
| 3                                                | Margin High                 | single o/p                |
| 4                                                | - Remote Sense / Margin Low | single or dual o/p main   |
| 5                                                | Spare                       |                           |
| 6                                                | Module, Isolated Inhibit    | single or dual o/p        |
| 7                                                | Module Inhibit Return       | single or dual o/p        |
| 8                                                | Current Share (SWP)         | single or dual o/p main   |
| 9                                                | + Remote Sense V2           | dual o/p, single is spare |
| 10                                               | - Remote Sense V2           | dual o/p, single is spare |

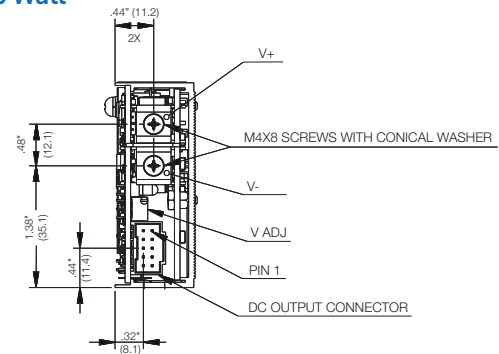
\* Note: All iMP modules have a green DCOK LED. (except for 36 W module)

Figure 4. Connector J1



Mates with  
Sager Electronics cable assembly  
PN: 217450059

## Single 210 Watt



## Single 360 Watt



## Single 750 Watt



## Single 1500 Watt 2-8 V



## Single 1500 Watt 10-60 V



## Dual 144 Watt



## Triple 36 Watt

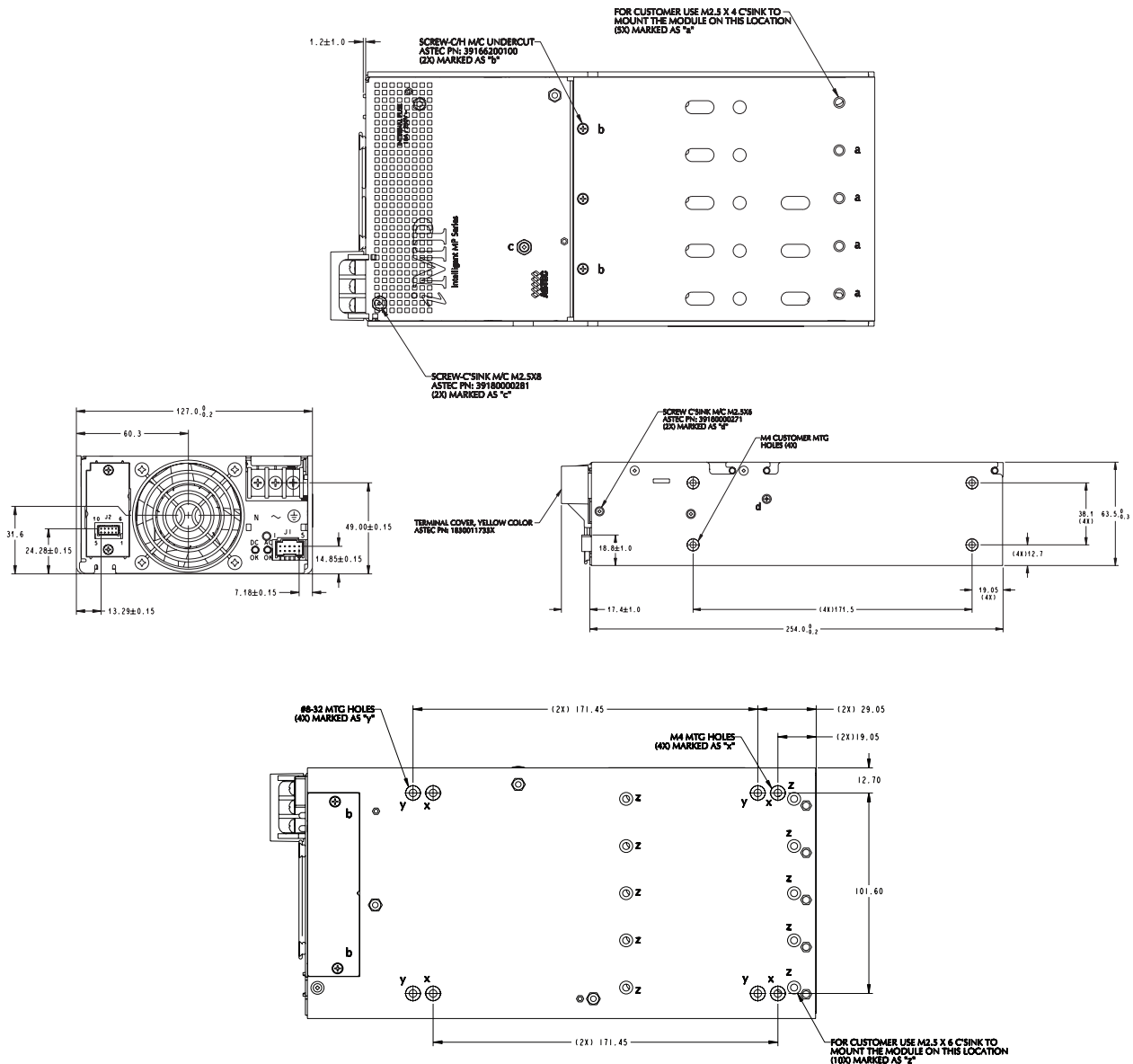


## IMP SERIES

## iMP4 (750/1158 Watts Max)

5-Inch Case Size: iMP4: 2.5" x 5" x 10" (63.5 mm x 127 mm x 254 mm)

Weight: iMP4 Case: 3 lbs. • 360 W Single 1.0 lb. • 750 W Single: 1.6 lbs. 144 W Dual: 0.6 lb.



## Notes:

1. Input: Barrier type. Three No. 6-32 B.H. screws (0.375" centers). Max torque: 6 in-lbs. (0.67 N-m). (Optional IEC input connector)
2. Control connectors: (J1) 10 position housing, gold plated contacts. Mates with Molex 90142-0010 housing with 90119-2110 crimp contacts (Molex C - Grid III Series). Connector kit includes mating connector and 10 pins, Astec part #70-841-004. (J2) 10 position housing (Landwin 2051P1000T). Mates with housing 2050S1000 (Landwin) with 2053T011P (Landwin) pins or JST PHDR-IOVS Housing and JST SPHD-002T-PO.5 pins.
3. Chassis material: aluminum with chemical film coating (conductive).
4. All dimensions are in millimeters and inches, and are typical.
5. Customer mounting -3 sides M4, bottom also includes 8-32 mounting holes. Max. penetration is 0.150" (3.8 mm). Max. torque: 5 in-lbs. (0.57 N-m).
6. Output module connections: All single O/P modules are M4 x 8 mm screws. Max. torque: 10 in-lbs. (1.13 N-m). Dual O/P module is M3 x 8 mm screws. Max. torque: 5 in-lbs. (0.57 N-m).

## IMP SERIES (CONTINUED)

## iMP8 (1000/1200 Watts Max)

7-Inch Case Size: iMP8: 2.5" x 7" x 10" (63.5 mm x 177.8 mm x 254 mm)

Weight: iMP8 Case: 4.1 lbs. • 210 W Single: 0.6 lb. • 360 W Single: 1.0 lb. 750 W Single: 1.6 lbs. 144 W Dual: 0.6 lb.



## Notes:

1. Input: Barrier type. Three No. 6-32 B.H. screws (0.375" centers). Max torque: 6 in-lbs. (0.67 N-m).
2. Control connectors: (J1) 10 position housing, gold plated contacts. Mates with Molex 90142-0010 housing with 90119-2110 crimp contacts (Molex C - Grid III Series) Connector kit includes mating connector and 10 pins, Astec part #70-841-004. (J2) 10 position housing (Landwin 2051P1000T). Mates with housing 2050S1000 (Landwin) with 2053T011P (Landwin) pins or JST PHDR-IOVS Housing and JST SPHD-002T-PO.5 pins.
3. Chassis material: aluminum with chemical film coating (conductive).
4. All dimensions are in millimeters and inches, and are typical.
5. Customer mounting -3 sides M4, bottom also includes 8-32 mounting holes. Max. penetration is 0.150" (3.8 mm). Max. torque: 5 in-lbs. (0.57 N-m).
6. Output module connections: All single O/P modules are M4 x 8 mm screws. Max. torque: 10 in-lbs. (1.13 N-m). Dual O/P module is M3 x 8 mm screws. Max. torque: 5 in-lbs. (0.57 N-m).

## IMP SERIES (CONTINUED)

## iMP1 (1200/1500 Watts Max)

8-Inch Case Size: iMP1: 2.5" x 8" x 11" (63.5 mm x 203.2 mm x 279.4 mm)

Weight: iMP1 Case: 5.0 lb. • 210 W Single: 0.6 lb. • 360 W Single: 1.0 lb. 750 W Single: 1.6 lb. • 144 W Dual: 0.6 lb.



## Notes:

1. Input: Barrier type. Three No. 6-32 B.H. screws (0.375" centers). Max torque: 6 in-lbs (0.67 N-m).
2. Control connectors: (J1) 10 position housing, gold plated contacts. Mates with Molex 90142-0010 housing with 90119-2110 crimp contacts (Molex C - Grid III Series). Connector kit includes mating connector and 10 pins, Astec part #70-841-004. (J2) 10 position housing (Landwin 2051P1000T). Mates with housing 2050S1000 (Landwin) with 2053T011P (Landwin) pins or JST PHDR-IOVS Housing and JST SPHD-002T-PO.5 pins.
3. Chassis material: aluminum with chemical film coating (conductive).
4. All dimensions are in millimeters and inches, and are typical.
5. Customer mounting -3 sides M4, bottom also includes 8-32 mounting holes. Max. penetration is 0.150" (3.8 mm). Max. torque: 5 in-lbs. (0.57 N-m).
6. Output module connections: All single O/P modules are M4 x 8 mm screws. Max. torque: 10 in-lbs. (1.13 N-m). Dual O/P module is M3 x 8 mm screws. Max. torque: 5 in-lbs. (0.57 N-m).

## OPTIONAL CANBUS OR RS485 INTERFACE

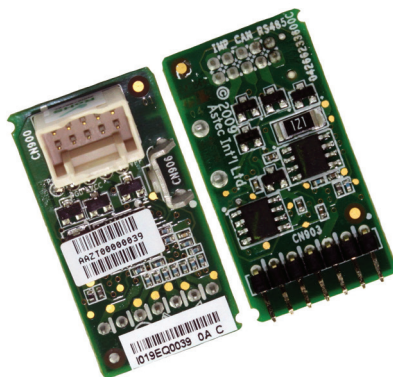
The RS485/CAN-to-I<sup>2</sup>C uses 2 Input Protocols and 1 Output Protocol.  
 The Input Protocols used are RS485 using Modbus (Command Index: 0x01), and CAN using modified Modbus (Command Index: 0x02).  
 The Output Protocol use is: I<sup>2</sup>C with SMBus support (Command Index: 0x80).



### RS485/CAN - to - I<sup>2</sup>C

For detailed info, download the Software Requirements

Specification (SRS) from [https://www.artesyn.com/assets/software\\_requirement\\_specifica\\_1248401123.pdf](https://www.artesyn.com/assets/software_requirement_specifica_1248401123.pdf)



iMP CAN RS485



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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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