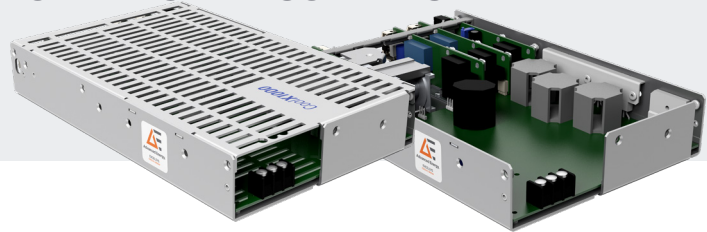


# EXCELSYS COOLX®1000

FANLESS, INTELLIGENT 1000 W MODULAR POWER SUPPLIES



Advanced Energy's CoolX®1000 series, part of our Excelsys product line, is the world's only fanless 1000 W modular power supply. Packaged in a compact 259.5 mm x 164 mm x 40.6 mm (10 in x 6.5 in x 1U) U-channel design, the CoolX1000 provides up to 1000 W without any requirement for fan or base plate cooling, eliminating acoustic noise detrimental to scientific and medical applications, as well as applications sensitive to vibration or where fan cooling is not available. The CoolX1000 also offers increased flexibility by allowing system designers to monitor and control power supply performance — essential for staving off process disruption — using either analog or digital communications (PMBus™). New -G option available on CoolX series. This option allows customers and safety agencies to carry out the full 4 kVAC and 5.6 kVDC primary to secondary isolation (Hi-Pot) test on a complete power supply and system, exactly as it will be used and installed in system with no modifications required.

## PRODUCT HIGHLIGHTS

### No Fan Featured

- 1000 W with 100% natural convection cooling
- No base plate needed
- No acoustic noise or vibrations

### Reliability

- MTBF > 2,900,000 hours
- High-input surge protection — 4 kV line to PE for harsh environments
- Reverse energy protection — no blocking diodes required
- 24 W standby power
- Safety approved to 5000 m altitude
- 93% efficiency
- Five-year warranty

### Flexibility

- Analog and digital management — PMBus™ monitoring and control capability

- Field-configurable — plug and play power
- Series and parallel outputs — higher voltages/currents
- Mounting options — base/side and DIN-Rail mounting

## TYPICAL APPLICATIONS

### Medical

- Clinical diagnostic equipment, medical lasers, dialysis equipment, radiological imaging, clinical chemistry

### Industrial

- Test and measurement, industrial machines, automation equipment, printing, telecommunications, audio equipment

### Hi Rel

- Harsh industrial electronics, radar (naval-andground-based), communications, test and measurement

## AT A GLANCE

CX10S CX10M

### Power

1000 W 1000 W

### Slots

6 6

### Cooling

No fan featured

### Parameters

259.5 mm x 164 mm x 40.6 mm  
(10 in x 6.5 in x 1U)

## Certification and Compliance

### Medical

- IEC60601-1 3rd edition, IEC60601-1-2 4th edition (EMC)
- 2 MOPP
- Dual fused

### Industrial

- IEC60950, IEC62368-1
- SEMI F47\*

### Defense/Aero

- MIL-STD-810G

## MODULES

| CoolX CoolMods                 |          |                            |                      |           |
|--------------------------------|----------|----------------------------|----------------------|-----------|
| Single Output Modules (1 Slot) | Vnom (V) | Set Point Adjust Range (V) | I <sub>max</sub> (A) | Power (W) |
| CmA                            | 5        | 2.5-6.0                    | 21.0                 | 105       |
| CmB <sup>1</sup>               | 12       | 6.0-15.0 <sup>2</sup>      | 15.0                 | 180       |
| CmC                            | 24       | 15.0-28.0                  | 8.3                  | 200       |
| CmD                            | 48       | 28.0-58.0 <sup>3</sup>     | 4.16                 | 200       |
| High Power Modules (3 Slot)    |          |                            |                      |           |
| CmE <sup>4</sup>               | 24       | 24.0-25.2                  | 25.0                 | 600       |
| CmF <sup>4</sup>               | 48       | 48.0-50.4                  | 12.5                 | 600       |
| Dual Output Modules (1 Slot)   |          |                            |                      |           |
| CmG <sup>5</sup> V1            | 24       | 3.0-30.0                   | 3.0                  | 90        |
| V2                             | 24       | 3.0-30.0                   | 3.0                  | 90        |
| CmH <sup>6</sup> V1            | 5        | 3.0-6.0                    | 6.0                  | 36        |
| V2                             | 24       | 3.0-30.0                   | 3.0                  | 90        |
| Wide Trim Modules (1 Slot)     |          |                            |                      |           |
| CmA-W01                        | 5        | 1.0-6.0                    | 21.0                 | 105       |
| CmB-W01                        | 12       | 1.0-15.0 <sup>2</sup>      | 15.0                 | 180       |
| CmC-W01                        | 24       | 2.0-28.0                   | 8.3                  | 200       |
| CmD-W01                        | 48       | 3.0-58.0 <sup>3</sup>      | 4.16                 | 200       |
| High Voltage Modules (1 Slot)  |          |                            |                      |           |
| CmK <sup>7</sup>               | 200      | 175-205                    | 0.66                 | 132       |

\* SEMI F47 compliant at input voltages > 180 VAC. Consult Advanced Energy for details.

<sup>1</sup> Full dynamic specifications may not be met at full load when output voltage is trimmed by above 13 V.

<sup>2</sup> Max trim 14 V when used with high power module

<sup>3</sup> Max trim 56 V when used with high power module

<sup>4</sup> a) Only one high power module (CmE or CmF) can be used per CoolPac.

b) During load transients starting from 0% load on the High Power modules, other modules in the CoolPac may experience an output voltage dynamic during the load change. Contact applications support for details or support.

<sup>5</sup> For the CmG module, the max combined power of both outputs is 120 W.

<sup>6</sup> For the CmH module, the max combined power of both outputs is 100 W.

<sup>7</sup> When a CmK module is used in the same pack as a CmE or CmF module, one module slot must remain unpopulated.

## ELECTRICAL SPECIFICATIONS

| Input                       |                                                |      |     |     |       |
|-----------------------------|------------------------------------------------|------|-----|-----|-------|
| Parameter                   | Conditions/Description                         | Min  | Nom | Max | Units |
| Nominal Input Voltage Range | Universal Input 47-440 Hz                      | 100  | —   | 240 | VAC   |
| AC Operating Input Range    |                                                | 85   | —   | 264 | VAC   |
| Extended AC Operating Range | Maximum for 5 seconds                          | —    | —   | 300 | VAC   |
| DC Input voltage range      |                                                | 120  | —   | 300 | VDC   |
| Input Current               | 90 VAC @ 620 W                                 | —    | 8.5 | —   | A     |
| Inrush Current              | 230 VAC @ 1000 W                               | —    | —   | 25  | A     |
| Power Factor                | 120 VAC @ 800 W                                | 0.98 | —   | —   | —     |
| Undervoltage Lockout        | Shutdown                                       | 65   | —   | 81  | VAC   |
| Input Fuses Rating          | Dual Fused (Line and Neutral) 250 VAC          | —    | 10  | —   | A     |
| Efficiency                  | 230 VAC, 1000W with 5 x CmC CoolMods           | —    | 92  | —   | %     |
|                             | 230VAC, 1000W with CmB/CmC/CmD/CmF combination | —    | 93  | —   | %     |

| Output                         |                                                                  |     |     |      |       |
|--------------------------------|------------------------------------------------------------------|-----|-----|------|-------|
| Parameter                      | Conditions/Description                                           | Min | Nom | Max  | Units |
| Single Output Modules (1 Slot) |                                                                  |     |     |      |       |
| Line Regulation                | From minimum to maximum rated voltage                            | —   | —   | ±0.2 | %     |
| Load Regulation                | For 0 to 100% load change                                        | —   | —   | ±0.4 | %     |
| Transient Response             | For 25% to 75% load change, 0.5 A/μs: voltage deviation          | —   | —   | ±6   | %     |
|                                | For 25% to 75% load change, 0.5 A/μs: settling time              | —   | —   | 500  | μs    |
| Ripple and Noise               | Peak-Peak, 20 MHz BW, 100 mV or % of nominal                     | —   | —   | 1.25 | %     |
| Overvoltage Protection         | Tracking OVP (autorecovery, % of setpoint)                       | 103 | —   | 125  | %     |
|                                | Hiccup OVP (% of maximum voltage)                                | 107 | —   | 160  | %     |
| Remote Sense                   | Maximum cable drop compensation                                  | —   | —   | 0.5  | VDC   |
| Rise Time                      | Monotonic                                                        | —   | —   | 5    | ms    |
| Turn-On Delay                  | From AC in                                                       | —   | —   | 1000 | ms    |
|                                | From Global Enable                                               | —   | —   | 12   | ms    |
|                                | From CoolMod Enable                                              | —   | —   | 12   | ms    |
| Hold-Up Time                   | For nominal output voltage at full load                          | 16  | —   | —    | ms    |
| Overcurrent Protection         | Straight line current limit with hiccup protection at 35% Vo nom | 105 | —   | 130  | %     |
| Short Circuit Protection       | Hiccup, Autorecovery                                             | —   | —   | —    | —     |
| Overtemperature Protection     | Autorecovery                                                     | —   | —   | —    | —     |
| Capacitive Load                |                                                                  | —   | —   | 10   | mF    |
| Dual Output Modules (1 Slot)   |                                                                  |     |     |      |       |
| Line Regulation                | From minimum to maximum rated voltage                            | —   | —   | ±0.5 | %     |
| Load Regulation                | For 0 to 100% load change                                        | —   | —   | ±2   | %     |
| Transient Response             | For 25% to 75% load change, 0.5 A/μs: voltage deviation          | —   | —   | ±10  | %     |
|                                | For 25% to 75% load change, 0.5 A/μs: settling time              | —   | —   | 1000 | μs    |
| Ripple and Noise               | Peak-Peak, 20 MHz BW, 100 mV or % of nominal                     | —   | —   | 2    | %     |
| Overvoltage Protection         | Hiccup OVP (% of maximum voltage)                                | 110 | —   | 130  | %     |
| Rise Time                      | Monotonic                                                        | —   | —   | 20   | ms    |
| Turn-On Delay                  | From AC in                                                       | —   | —   | 1000 | ms    |
|                                | From Global Enable                                               | —   | —   | 100  | ms    |
|                                | From CoolMod Enable                                              | —   | —   | 100  | ms    |

## ELECTRICAL SPECIFICATIONS (CONTINUED)

|                                  |                                                                  |     |   |       |     |
|----------------------------------|------------------------------------------------------------------|-----|---|-------|-----|
| Hold-Up Time                     | For nominal output voltage at full load                          | 16  | — | —     | ms  |
| Overcurrent Protection           | Hiccup, Autorecovery                                             | 165 | — | 335   | %   |
| Short Circuit Protection         | Hiccup, Autorecovery                                             | —   | — | —     | —   |
| Overtemperature Protection       | Hiccup, Autorecovery                                             | —   | — | —     | —   |
| Capacitive Load                  |                                                                  | —   | — | 270   | μF  |
| High Power Modules (3 Slots)     |                                                                  |     |   |       |     |
| Line Regulation                  | From minimum to maximum rated voltage                            | —   | — | ±0.5  | %   |
| Load Regulation                  | For 0 to 100% load change                                        | —   | — | ±3.5  | %   |
| Transient Response               | For 25% to 75% load change, 0.5 A/μs: voltage deviation          | —   | — | ±4    | %   |
|                                  | For 25% to 75% load change, 0.5 A/μs: settling time              | —   | — | 1000  | μs  |
| Ripple and Noise                 | Peak-Peak, 20 MHz BW, 100 mV or % of nominal                     | —   | — | 3.5   | %   |
| Overvoltage Protection           | Tracking OVP (autorecovery, % of setpoint)                       | 102 | — | 120   | %   |
|                                  | Hiccup OVP (% of maximum voltage)                                | 107 | — | 130   | %   |
| Remote Sense                     | Maximum cable drop compensation                                  | —   | — | 0.5   | VDC |
| Rise Time                        | Monotonic                                                        | —   | — | 5     | ms  |
| Turn-On Delay                    | From AC in                                                       | —   | — | 1000  | ms  |
|                                  | From Global Enable                                               | —   | — | 20    | ms  |
|                                  | From CoolMod Enable                                              | —   | — | 20    | ms  |
| Hold-Up Time                     | For nominal output voltage at full load                          | 16  | — | —     | ms  |
| Overcurrent Protection           | Straight line current limit with hiccup protection at 35% Vo nom | 105 | — | 130   | %   |
| Short Circuit Protection         | Hiccup, Autorecovery                                             | —   | — | —     | —   |
| Overtemperature Protection       | Autorecovery                                                     | —   | — | —     | —   |
| Capacitive Load                  |                                                                  | —   | — | 2.5   | mF  |
| Wide Trim Power Modules (1 Slot) |                                                                  |     |   |       |     |
| Line Regulation                  | From minimum to maximum rated voltage                            | —   | — | ±0.25 | %   |
| Load Regulation                  | For 0 to 100% load change                                        | —   | — | ±0.4  | %   |
| Transient Response               | For 25% to 75% load change, 0.5 A/μs: voltage deviation          | —   | — | ±6    | %   |
|                                  | For 25% to 75% load change, 0.5 A/μs: settling time              | —   | — | 500   | μs  |
| Ripple and Noise                 | Peak-Peak, 20 MHz BW, 100 mV or % of nominal                     | —   | — | 1.25  | %   |
| Overvoltage Protection           | Tracking OVP (autorecovery, % of setpoint)                       | 103 | — | 125   | %   |
|                                  | Hiccup OVP (% of maximum voltage)                                | 107 | — | 160   | %   |
| Remote Sense                     | Maximum cable drop compensation                                  | —   | — | 0.5   | VDC |
| Rise Time                        | Monotonic                                                        | —   | — | 5     | ms  |
| Turn-On Delay                    | From AC in                                                       | —   | — | 1000  | ms  |
|                                  | From Global Enable                                               | —   | — | 12    | ms  |
|                                  | From CoolMod Enable                                              | —   | — | 12    | ms  |
| Hold-Up Time                     | For nominal output voltage at full load                          | 16  | — | —     | ms  |
| Overcurrent Protection           | Straight line current limit with hiccup protection at 35% Vo nom | 105 | — | 130   | %   |
| Short Circuit Protection         | Hiccup, Autorecovery                                             | —   | — | —     | —   |
| Overtemperature Protection       | Autorecovery                                                     | —   | — | —     | —   |
| Capacitive Load                  |                                                                  | —   | — | 10    | mF  |
| High Voltage Modules (1 Slot)    |                                                                  |     |   |       |     |
| Line Regulation                  | From minimum to maximum rated voltage                            | —   | — | ±0.5  | %   |
| Load Regulation                  | For 0 to 100% load change                                        | —   | — | ±1.0  | %   |
| Transient Response               | For 25% to 75% load change, 0.5 A/μs: voltage deviation          | —   | — | ±3.75 | %   |
|                                  | For 25% to 75% load change, 0.5 A/μs: settling time              | —   | — | 500   | μs  |

## ELECTRICAL SPECIFICATIONS (CONTINUED)

|                            |                                                                  |     |   |      |    |
|----------------------------|------------------------------------------------------------------|-----|---|------|----|
| Ripple and Noise           | Peak-Peak, 20 MHz BW, 100 mV or % of nominal                     | —   | — | 1.0  | %  |
| Overvoltage Protection     | Tracking OVP (autorecovery, % of setpoint)                       | 103 | — | 125  | %  |
|                            | Hiccup OVP (% of maximum voltage)                                | 112 | — | 122  | %  |
| Rise Time                  | Monotonic                                                        | —   | — | 20   | ms |
| Turn-On Delay              | From AC in                                                       | —   | — | 1000 | ms |
|                            | From Global Enable                                               | —   | — | 30   | ms |
|                            | From CoolMod Enable                                              | —   | — | 30   | ms |
| Hold-Up Time               | For nominal output voltage at full load                          | 16  | — | —    | ms |
| Overcurrent Protection     | Straight line current limit with hiccup protection at 35% Vo nom | 105 | — | 130  | %  |
| Short Circuit Protection   | Hiccup, Autorecovery                                             | —   | — | —    | —  |
| Overtemperature Protection | Autorecovery                                                     | —   | — | —    | —  |
| Capacitive Load            |                                                                  | —   | — | 10   | μF |

## Auxiliary Output

| Parameter                      | Conditions/Description             | Min  | Nom | Max  | Units |
|--------------------------------|------------------------------------|------|-----|------|-------|
| Auxiliary Output Voltage       | Aux Voltage Option A               | 11.6 | 12  | 12.4 | V     |
|                                | Aux Voltage Option B               | 4.8  | 5   | 5.2  | V     |
| Load Regulation                |                                    | —    | —   | ±2   | %     |
| Line Regulation                | For ±10% change from nominal line  | —    | —   | ±0.5 | %     |
| Ripple and Noise               | Peak-Peak, 20 MHz BW, % of nominal | —    | —   | 4    | %     |
| Maximum Output Current         | Aux Voltage Option A               | —    | —   | 1.96 | A     |
|                                | Aux Voltage Option B               | —    | —   | 4.7  | A     |
| Maximum Output Capacitive Load |                                    | —    | —   | 1000 | μF    |
| Output Overcurrent Protection  | Hiccup                             | 105  | —   | 145  | %     |
| Short Circuit Protection       | Yes, autorecovery                  | —    | —   | —    | —     |

## Galvanic Isolation

| Parameter               | Conditions/Description                                                 | Min  | Nom | Max | Units |
|-------------------------|------------------------------------------------------------------------|------|-----|-----|-------|
| Input to Output         | Reinforced (2 x MOPP); contact Advanced Energy for Hi-Pot instructions | 4000 | —   | —   | VAC   |
| Input to Case           | Basic (1 x MOPP)                                                       | 1850 | —   | —   | VAC   |
| Output to Case          | Basic (1 x MOPP)                                                       | 1850 | —   | —   | VAC   |
| Output to Output        | Basic (1 x MOPP)                                                       | 1850 | —   | —   | VAC   |
| Output to Output (Dual) | CmG, CmH V1-V2                                                         | 500  | —   | —   | VDC   |

## Reliability

| Parameter            | Conditions/Description     | Min     | Nom | Max  | Units |      |
|----------------------|----------------------------|---------|-----|------|-------|------|
| Reliability and MTBF | Telecordia SR-332, Issue 4 | CoolPac | —   | 0.29 | —     | Fpmh |
|                      |                            | CoolMod | —   | 0.11 | —     | Fpmh |
| Warranty             | 5 years                    | —       | —   | —    | —     |      |

## ELECTRICAL SPECIFICATIONS (CONTINUED)

| Environmental         |                                                            |     |     |      |       |
|-----------------------|------------------------------------------------------------|-----|-----|------|-------|
| Parameter             | Conditions/Description                                     | Min | Nom | Max  | Units |
| Operating Temperature | Operates to specification below -20°C after 10 min warm-up | -30 | —   | 85   | °C    |
| Storage Temperature   |                                                            | -40 | —   | 85   | °C    |
| Derating              | See derating curves in the CoolX1000 Designers Manual      | —   | —   | —    | —     |
| Relative Humidity     | Non-condensing                                             | 5   | —   | 95   | %RH   |
| Shock and Vibration   | MIL-STD-810G Method 514.6                                  | —   | —   | —    | —     |
| Altitude              |                                                            | —   | —   | 5000 | m     |

| Leakage Currents                   |                               |     |     |       |
|------------------------------------|-------------------------------|-----|-----|-------|
| Parameter                          | Conditions/Description        | Nom | Max | Units |
| <b>AC Leakage Current</b>          | <b>Input to Earth Ground</b>  | —   | —   | —     |
| Normal Condition (High Line)       | Mains Voltage 264 VAC / 60 Hz | —   | 300 | µA    |
| Single Fault Condition (High Line) | Mains Voltage 264 VAC / 60 Hz | —   | 500 | µA    |
| <b>Touch Current</b>               |                               |     |     |       |
| Normal Condition                   | Mains Voltage 264 VAC / 60 Hz | —   | 100 | µA    |
| Single Fault Condition             | Mains Voltage 264 VAC / 60 Hz | —   | 500 | µA    |

| EMC                              |                                                |                 |
|----------------------------------|------------------------------------------------|-----------------|
| Parameter                        | Conditions/Description                         | Criteria        |
| Radiated Emissions <sup>1</sup>  | EN 55011, EN 55022 and FCC, Class B            | Compliant       |
| Conducted Emissions <sup>2</sup> | EN 55011, EN 55022 and FCC, Class B            | Compliant       |
| Power Line Harmonics             | EN 61000-3-2, Class A                          | Compliant       |
| Voltage Flicker                  | EN 61000-3-3                                   | Compliant       |
| ESD                              | EN 61000-4-2, level 4, 8 kV contact, 15 kV air | A               |
| Radiated Immunity                | EN 61000-4-3, level 3, 10V/m 80-2700 MHz       | A               |
| Electrical Fast Transient        | EN 61000-4-4, level 4, ±4 kV                   | A               |
| Surge Immunity                   | EN 61000-4-5, level 4, 2 kV DM, 4 kV CM        | A               |
| Conducted RF Immunity            | EN 61000-4-6, level 3, 10 Vemf 150 KHz-80 MHz  | A               |
| Power Frequency Magnetic Field   | EN 61000-4-8, level 4, 30 A/m                  | A               |
| Voltage Dips & Interruptions     | EN 61000-4-11                                  | A & B Compliant |

<sup>1</sup> Consult AE applications for system level compliance

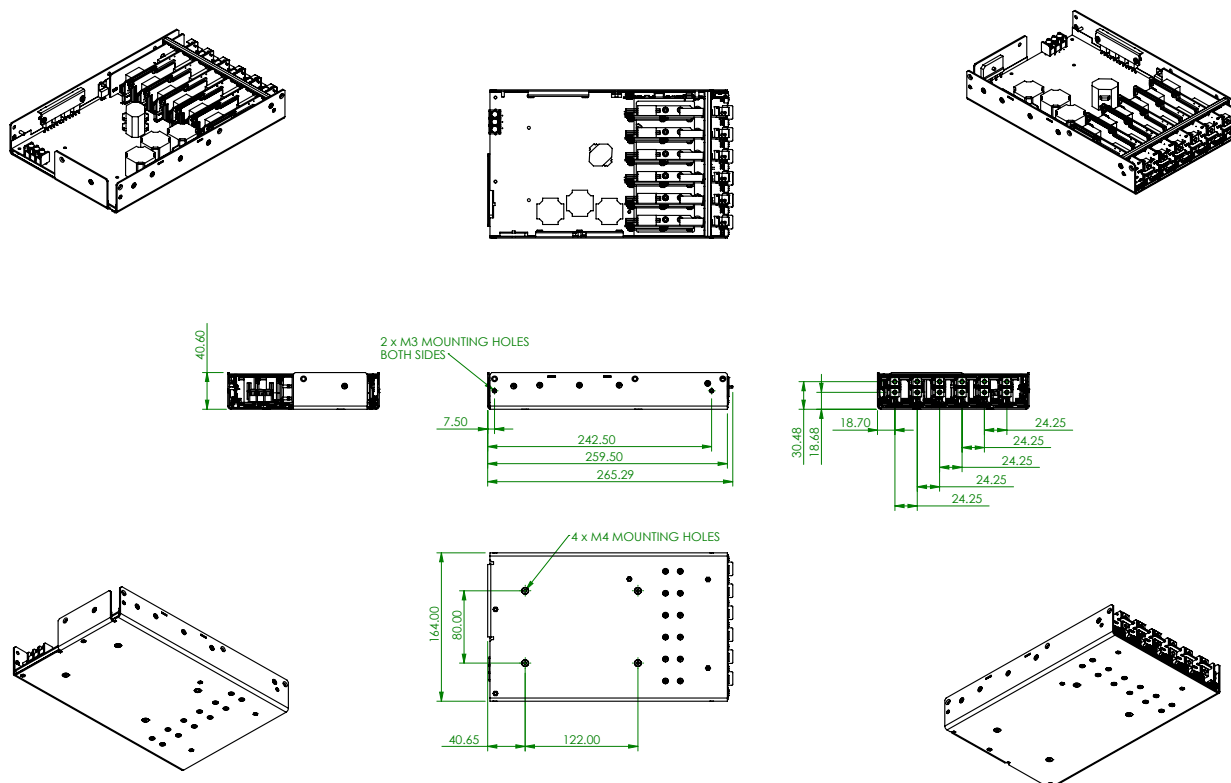
<sup>2</sup> Low leakage option – Class A

| Standards & Directives    |                                                                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard                  | Conditions/Description                                                                                                                                  |
| Safety Agency Approvals   | EN60601-1 3rd edition, UL60601-1, CSA601, EN60950 2nd edition, CSA C22.2 No. 60950-1                                                                    |
| IEC/EN 60950-1, Edition 2 | UL 60950-1/CSA 22.2 No 60950-1, Edition 2; 5000 m (16,400 ft) altitude, 100 to 240 VAC ± 10%                                                            |
| IEC/EN 60601-1, Edition 3 | IEC 60601-1 (2005), EN60601-1 (2006), ANSI/AAMI ES 60601-1 (2005), CAN/CSA C22.2 No. 60601-1 (2008); 5,000 m (16,400 ft) altitude, 100 to 240 VAC ± 10% |
| IEC 62368 Edition 2       | IEC 62368-1 (2014) Edition 2 5000 m (16,400 ft) altitude, 100 to 240 VAC ± 10%                                                                          |
| IEC 60601-1-2 Edition 4   | IEC 60601-1-2 (2014)                                                                                                                                    |
| Protection class          | Class I                                                                                                                                                 |
| WEEE                      | Waste Electrical and Electronic Equipment Directive (WEEE) 2002/96/EC                                                                                   |
| ROHS                      | EU DIRECTIVE 2011/65/EC RoHS compliancy                                                                                                                 |
| REACH                     | Compliant                                                                                                                                               |

## MECHANICAL SPECIFICATIONS

| Mechanical Data                          |                                        |                                                                                                                                                                      |
|------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter                                | Description                            |                                                                                                                                                                      |
| Dimensions (L x W x H)                   | L x W x H                              | 259.5 mm x 164 mm x 40.6 mm (10 in x 6.5 in x 1U)                                                                                                                    |
| Weight                                   | Nominal Weight: CoolPac + 6 x CoolMods | 1 Kg                                                                                                                                                                 |
| Connectors                               | Description                            | Mating Connectors (if applicable)                                                                                                                                    |
| AC/DC Input Terminal Block               | TE 2-1437667-S, DINKLE DT-35-B07W-03   | —                                                                                                                                                                    |
| Main DC Output Terminal Block (CmA-CmF)  | M4 Screws                              | —                                                                                                                                                                    |
| Main DC Output Terminal Block (CmG, CmH) | Camden - CTB9350/4A                    | —                                                                                                                                                                    |
| Output Signal Connector (CmG, CmH)       | Molex - 87833-0831                     | —                                                                                                                                                                    |
| System Signal Connector J1007            | Molex 87833-0831 8-way                 | Locking Molex 51110-0860;<br>Non Locking Molex 51110-0850;<br>Crimp Terminal: Molex p/n 50394 or Molex 51110-0856 which includes locking tab and polarization keying |
| Output Signal Connectors J1001-1006      | Molex 87833-0631 6-way                 | Locking Molex 51110-0660;<br>Non Locking Molex 51110-0650;<br>Crimp Terminal: Molex p/n 50394 or Molex 51110-0656 which includes locking tab and polarization keying |
| Output Sense Connectors J3               | JST-S2BPH-K(LF)(SN)                    | JST PHR2. Crimp Terminal JST BPH-002TP0.5S or SPH-002T-P05S                                                                                                          |
| Auxiliary Output Connector J1            | Molex 1041880210 2pin                  | —                                                                                                                                                                    |

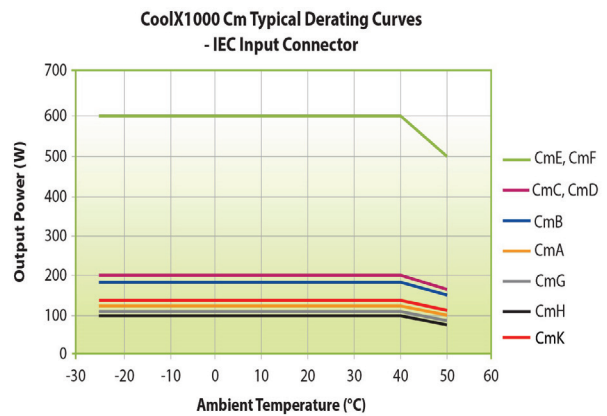
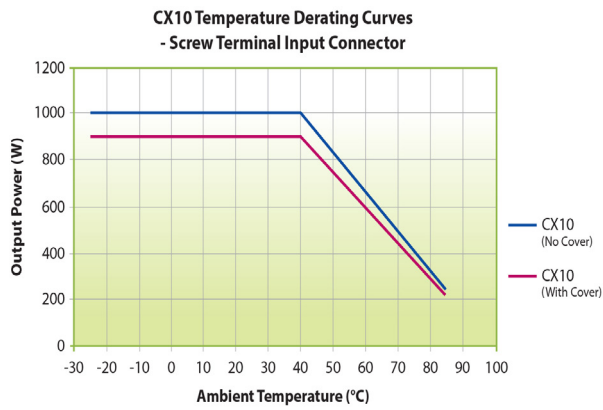
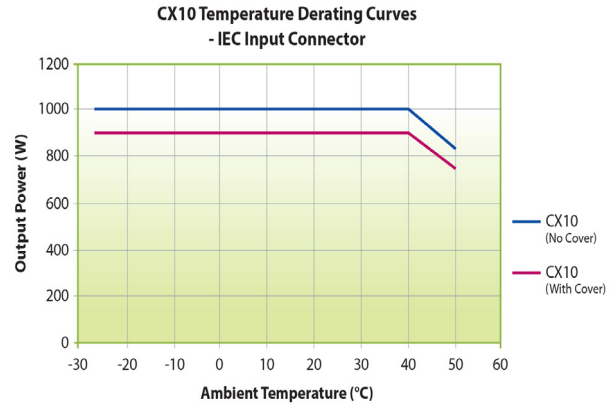
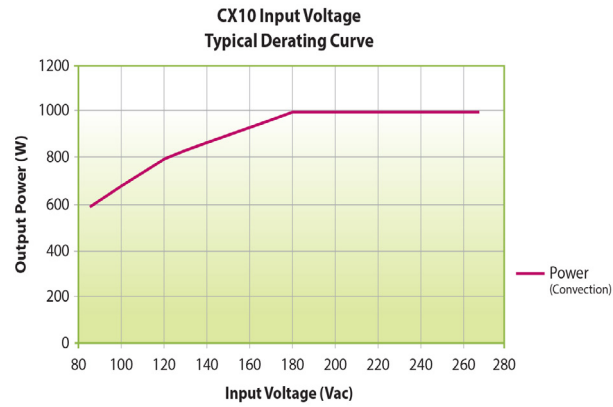
## CoolX Mechanical Drawings



\*Maximum screw penetration from base does not exceed 1.5mm.

CoolX can be mounted on its base, vertically or on its side. CoolX can also be mounted on the DIN Rail accessory (Z744).

EFFICIENCY AND DERATING CURVES

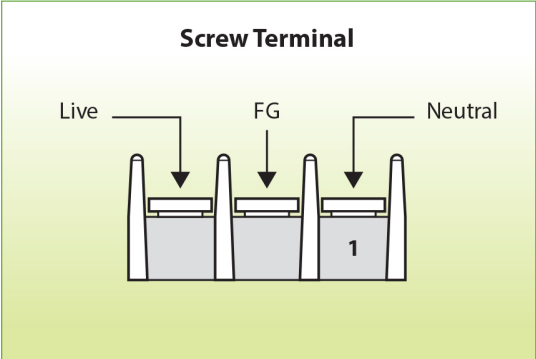


\* Temperature and Derating curves based on CoolX1000 mounted on a 612mm x 612mm x 1.7mm conductive surface



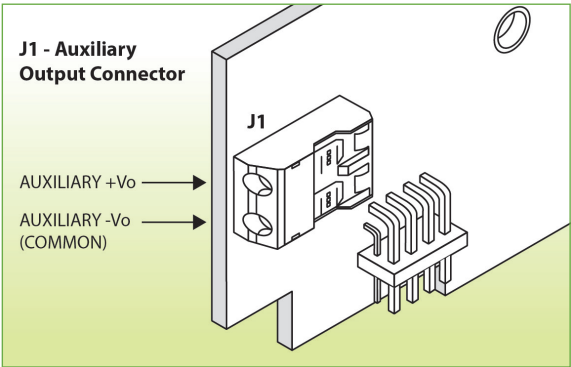
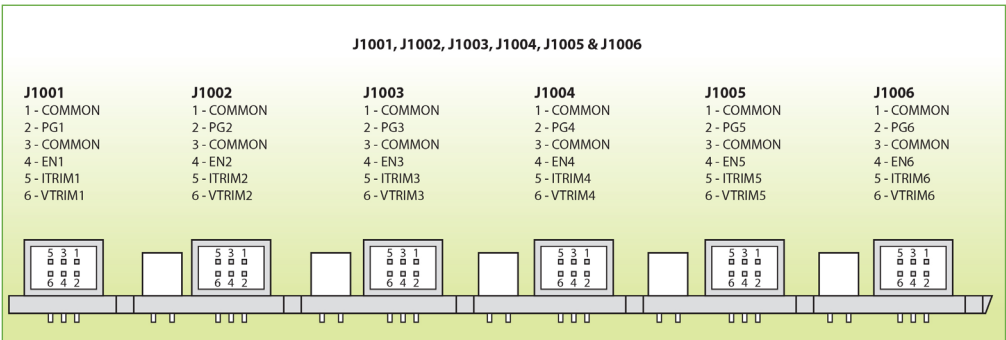
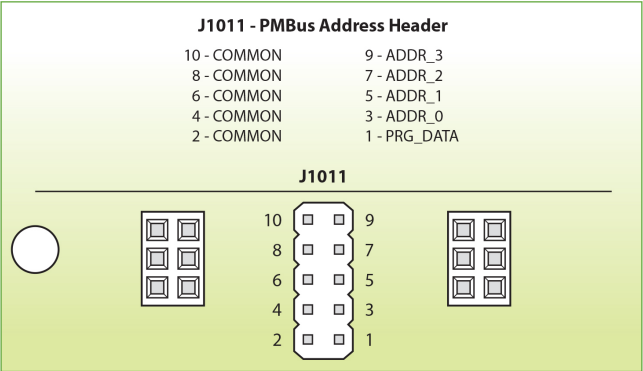
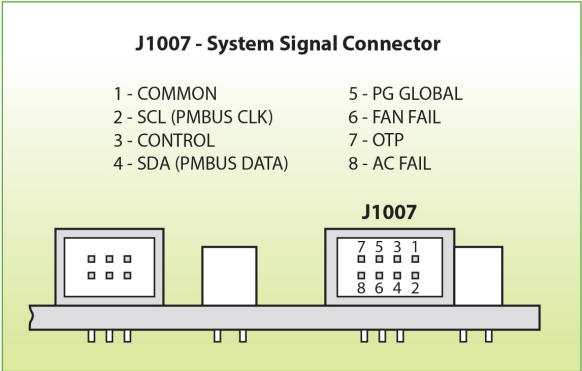
INTERFACE

Input Connectors



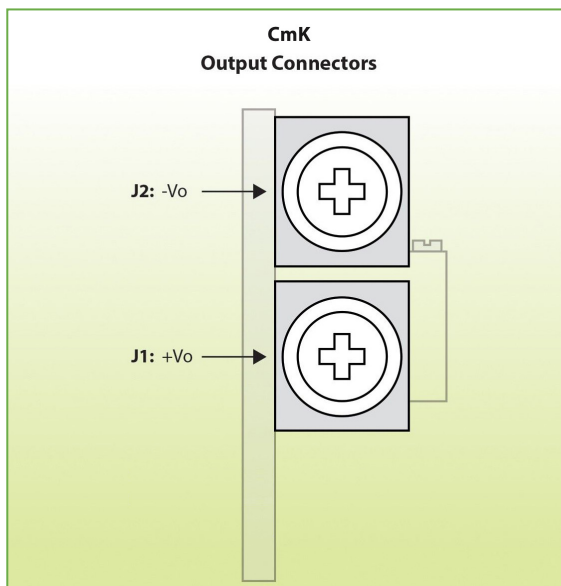
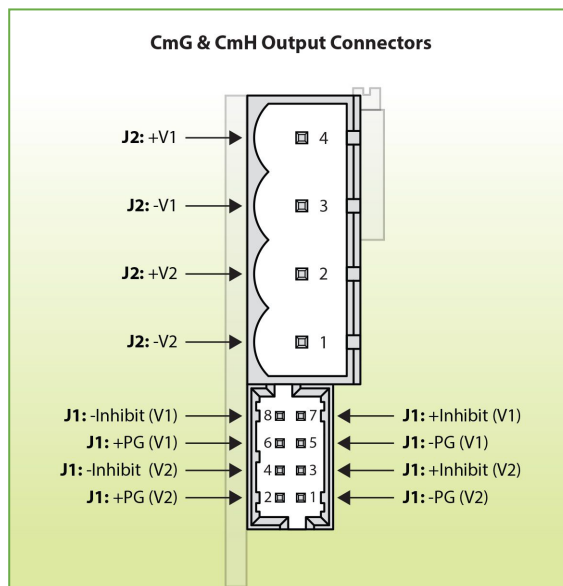
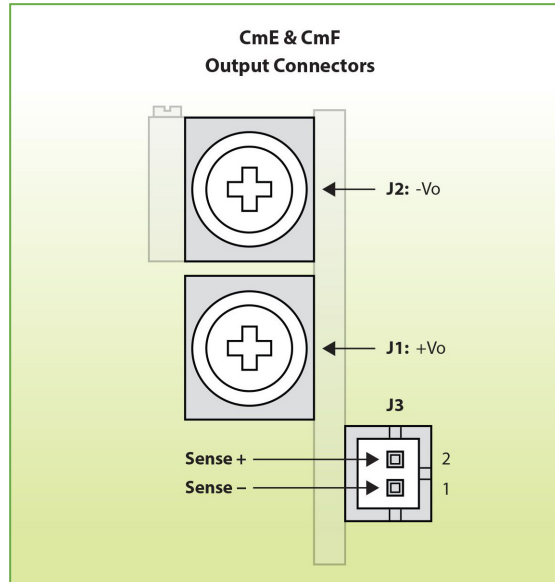
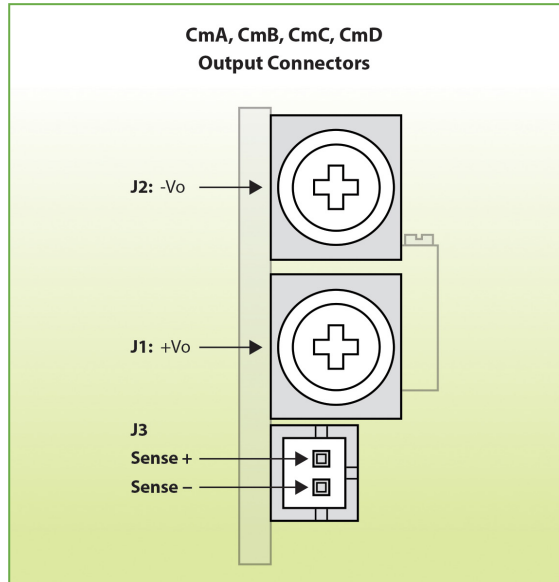
Standard (Screw Terminal)

CoolPac Connectors

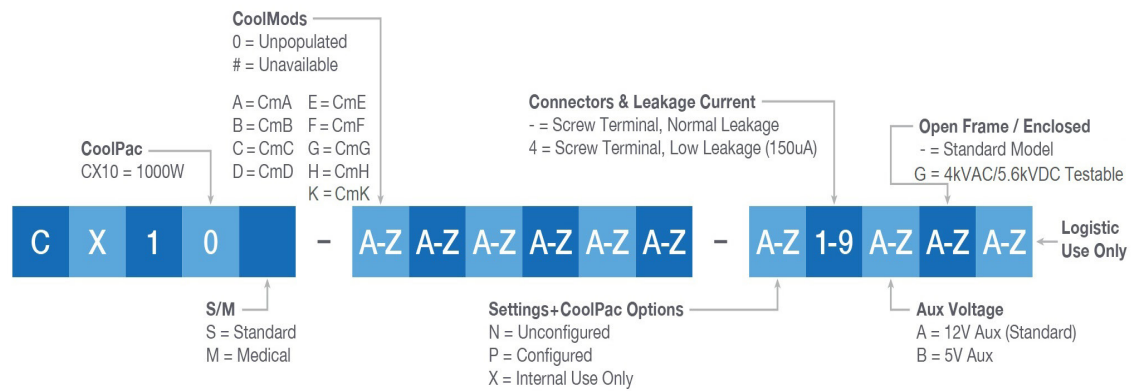


INTERFACE (CONTINUED)

CoolMod Connectors



## CONFIGURATION



\*CmE or CmF High Power Module (3 slot module) can only occupy Slots D/E/F.

#### Configuration Example 1

CoolX part number CX10S-ACD##E-N-A specifies the following product:

CX10S—1000 W IEC62368 approved

Slot 1: CmA, 5 V/21 A module

Slot 2: CmC, 24 V/8.3 A module

Slot 3: CmD, 48 V/4.16 A module

Slot 4: Unusable because slot 6 contains a CmE module

Slot 5: Unusable because slot 6 contains a CmE module

Slot 6: CmE, 24 V/25 A module

Option N: Nominal output voltage settings

Option A: 12V/1.95 A bias supply voltage

#### Configuration Example 2

CoolX part number CX10M-ABCCDH-PB specifies the following product:

CX10M—1000 W IEC60601-1 approved

Slot 1: CmA, 5 V/21 A module

Slot 2: CmB, 12 V/15 A module

Slot 3: CmC, 24 V/8.3 A module

Slot 4: CmC, 24 V/8.3 A module

Slot 5: CmD, 48 V/4.16 A module

Slot 6: CmH, 5 V/6 A and 24 V/3 A dual module

Option P: Preset required. Slot 3 and Slot 4 connected in parallel

Option B: 5 V/4.7 A bias supply voltage



For international contact information,  
visit [advancedenergy.com](https://advancedenergy.com).

[powersales@aei.com](mailto:powersales@aei.com) (sales support)  
[productsupport.ep@aei.com](mailto:productsupport.ep@aei.com) (technical support)  
+1 888 412 7832

## ABOUT ADVANCED ENERGY

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With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

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## Hauptsitz

### **Simpex Electronic AG**

Binzackerstrasse 33

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Internet [www.simpex.ch](http://www.simpex.ch)

## Manufaktur

### **Simpex Electronic SA**

En Bas-le-Port 1

CH-2088 Cressier

E-Mail [contact@simpex.ch](mailto:contact@simpex.ch)

Internet [www.simpex.ch](http://www.simpex.ch)