CX06 Instruction Manual

High Voltage Products. High Voltage Experts.

PLEASE READ THIS INSTRUCTION MANUAL CAREFULLY BEFORE INSTALLATION OR USE OF THIS PRODUCT, AND KEEP IT IN A SAFE PLACE FOR FUTURE REFERENCE. FOLLOW ALL WARNINGS AND INSTRUCTIONS MARKED ON THE PRODUCT.

HIGH VOLTAGE WARNING!

Dangerous voltages are present within these power supplies. These products should only be worked on by qualified personnel.

coolPacs		
CX06S	**Standard**	**600W**
CX06M	**Medical**	**600W**

CX06 products are comprised of:

***coolPac* Chassis Converters** intended for use in CoolX series ONLY. These must NOT be used for any other purpose.

and

***coolMod* Plug-In Modules** intended for use in CoolX series ONLY. These must NOT be used for any other purpose.

coolMods		
CmA	***5V***	***105W***
CmB	***12V***	***180W***
CmC	***24V***	***200W***
CmD	***48V***	***200W***
CmD-X01*	***33V***	***175W***
CmE**	***24V***	***600W***
CmF**	***48V***	***600W***
CmG***	***24V/24V***	***120W***
CmH*****	***5V/24V***	***105W***
CmM	***5V***	***105W***
CmN	***12V***	***180W***
CmP	***24V***	***200W***
CmQ	***48V***	***200W***

CX06 products are designed for use within other equipment or enclosures, which restrict access to **authorised competent personnel only.** This equipment is only intended for use in a **restricted access area**. The unit covers are designed only to protect skilled personnel from hazards. They must not be used as part of the external covers of any equipment where they may be accessible to operators, since, under full load conditions, part or parts of the unit may reach temperatures in excess of those considered safe for operator access. This equipment is not suitable for use in locations where children are likely to be present.

IMPORTANT CONSIDERATIONS

The cool*Pac* should be supplied only by a power source of the type indicated on its label. A socket outlet shall be installed near the equipment and shall be easily accessible. The unit should only be used with a suitably rated mains cord and appropriate IEC320 type connector, sourced by the end user, and in accordance with the requirements of Table 3B of IEC60950-1 (latest edition). If in doubt, contact Excelsys Engineering Department for assistance. Double pole / neutral fusing is used. If the installation is not completely disconnected from power, parts may remain live even if one of the two mains fuses has blown.

When adding or removing cool*Mods* from the cool*Pac*, care must be taken to handle the cool*Mods* by the output terminals ONLY, ensuring that all other surface mount components are not unduly damaged.

When securing the product, do not use screws which infringe the maximum penetration depth of 2mm. Customer fixings are provided on the base of the unit in addition to the side mounting which allows the unit to be mounted on either side of the coolPac chassis.

PARTS OF THE UNIT WILL BECOME HOT DURING OPERATION; ALLOW TIME TO COOL BEFORE HANDLING.
AFTER DISCONNECTING THE AC SOURCE, ALLOW 4 MINUTES BEFORE DISASSEMBLY TO ALLOW CAPACITORS WITHIN THE UNIT TO DISCHARGE.

INPUT SPECIFICATIONS (*coolPac* only)

Input Voltage Range	100 to 240Volts AC
Input Frequency	50/60 Hz
Earth Leakage Current	300µA

Input Fusing

WARNING! To protect against risk of fire, replace only with fuses of same rating and type. Fuses must be replaced by qualified service personnel only.

Line	*Reference*	*Fuse*	*Type*	*Voltage*	*Size*
Live	FS1	8A	F	250V	5 X 20mm
Neutral	FS2	8A	F	250V	5 X 20mm

OUTPUT SPECIFICATIONS (*coolMod* only)

See cool*Mod* table below, with more detail in Designers' Manual. Each module may be adjusted over the full voltage range shown in the table **subject to not exceeding the maximum rated Voltage and Power shown in the table.**

SAFETY

The CX06 when correctly installed in a limited access environment is designed to comply with the following requirements
CX06S: UL60950-1, CAN/CSA C22.2 No. 60950-1-07, IEC60950-1, IEC62368-1, EN60950-1
CX06M: ANSI/AAMI ES60601-1, CAN/CSA C22.2 No. 60601-1, IEC 60601-1, EN60601-1.

For current approval status, please contact Excelsys Sales. Equipment manufacturers must protect service personnel against inadvertent contact with the module output terminals.

Environmental Parameters
The products are designed for the following parameters:
- Pollution Degree 2
- Installation Category 2
- Class I
- For use as part of another piece of equipment such that unit is accessible to service engineers only
- Altitude: -155 metres to +5000 metres from sea level
- Humidity: 10 to 95% non-condensing
- Operating temperature -40°C to 85°C
- Derate at 1.67% per °C above 40°C and up to 85°C
- Derating applies to both *coolPacs* and *coolMods*

Approval Limitations

Use In North America
When this product is used on 180 to 253 Volts AC mains with no neutral, connect one live wire to L (live) terminal and the other live wire to N (neutral) terminal on the input connector.

The attachment plug shall be rated to a current not less than 125% of the rated current of the equipment.

Levels Of Insulation

Subject to the limitations above.
- Primary mains circuits to earth: 4mm spacing
- Primary mains circuits to secondary: 8mm spacing

Dielectric strength testing is carried out as follows:
- Primary mains circuits to chassis: 1850V AC
- Secondary to chassis: 1850V AC
- Primary mains circuits to secondary: 4243VAC or 6000VDC.

Earth Terminal Marking IMPORTANT

If in the end use equipment the incoming mains cable earth wire connects directly to the CX06 "GND" connection without being interrupted or junctioned on its way to that connection, then this connection forms the main protective earth of the system. To comply with IEC60950-1, IEC62368-1 or IEC60601-1 requirements this must be marked with the symbol defined in IEC60417 No. 5019a. The customer should therefore affix an adhesive label which will pass the 15 Second rub test (IEC60950 section 1.7.13) showing the symbol adjacent to the earth connection. This symbol must only be used at the first interruption / connection of the incoming earth wire.

Health And Safety At Work Act (UK only)

To protect service personnel and users and to comply with section 6 of the Health And Safety Acts, a clearly visible label should be fitted warning that surfaces of these units may be hot and must not be touched when the units are in operation.

Receipt And Unpacking

On receipt a unit should be unpacked carefully and checked for transit damage. If the unit is damaged, do not apply power or install the unit. SEEK SPECIALIST ADVICE!

Warranty

Warranty conditions are contained in our standard terms and conditions. Contact your authorised outlet for repair.

Options

Conformal Coating
Conformal Coating and Ruggedisation
IEC Terminal or Input Cable
Cover*****
Lower Leakage Current
12V or 5V Auxiliary Supply

See Designers' Manual for details.

coolMods

coolMod maximum power ratings must not be exceeded

						CX06 Ratings		*CX18 Ratings*	
Model	*Vmin*	*Vnom*	*Vmax*	*Imax*	*Watts*		*Imax*	*Watts*	
CmA	2.5	**5.0**	6.0	21.0	**105**		30.0	**150**	
CmB	6.0	**12.0**	15.0	15.0	**180**		23.3	**280**	
CmC	15.0	**24.0**	28.0	8.33	**200**		12.5	**300**	
CmD	28.0	**48.0**	58.0	4.17	**200**		6.25	**300**	
CmD-X01*	28.0	**33.0**	36.0	5.30	**175**		-	-	
CmE**	22.8	**24.0**	25.2	25.0	**600**		37.5	**900**	
CmF**	45.6	**48.0**	50.4	12.5	**600**		18.75	**900**	
CmG***	3.0	**24.0**	30.0	3.0	**90**	**120**	4.0	**120**	**180**
	3.0	**24.0**	30.0	3.0	**90**		4.0	**120**	
CmH****	3.0	**5.0**	6.0	6.0	**36**	**100**	6.0	**36**	**100**
	3.0	**24.0**	30.0	3.0	**90**		3.0	**90**	
CmM	1.0	**5.0**	6.0	21.0	**105**		30.0	**150**	
CmN	1.0	**12.0**	15.0	15.0	**180**		23.3	**280**	
CmP	1.0	**24.0**	28.0	8.33	**200**		12.5	**300**	
CmQ	3.0	**48.0**	58.0	4.17	**200**		6.25	**300**	

Permitted Power Ratings for Reliable Operation.

coolPacs and coolMods are operating within their power ratings as listed above, taking care to factor in the appropriate derating if the ambient temperature exceeds 40°C.

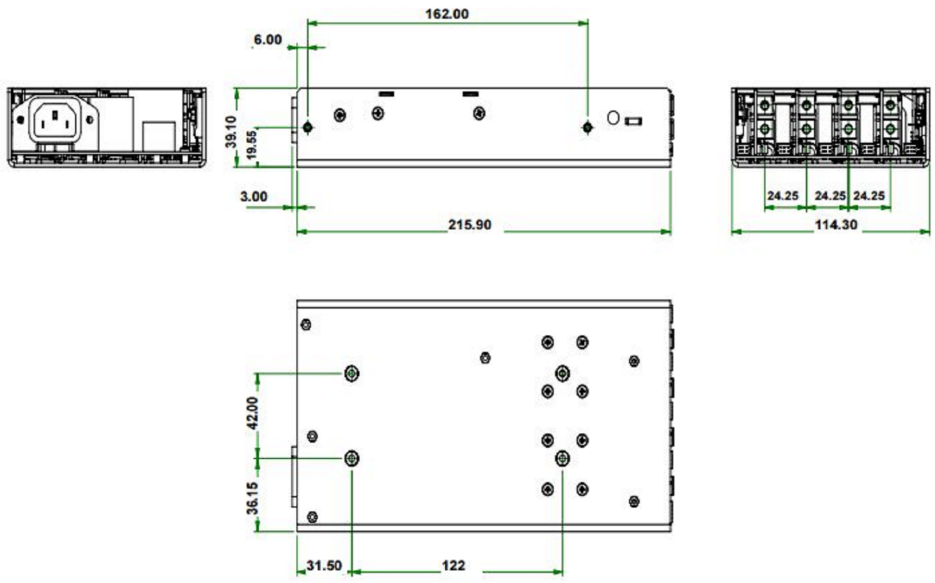
Model	*Watts*	*L x H x W (mm)*
CX06S - Standard	600W	215.90 x 39.10 x 114.30
CX06M - Medical	600W	215.90 x 39.10 x 114.30

Derate linearly from 600W at 180Vac to 420W at 100Vac nom.

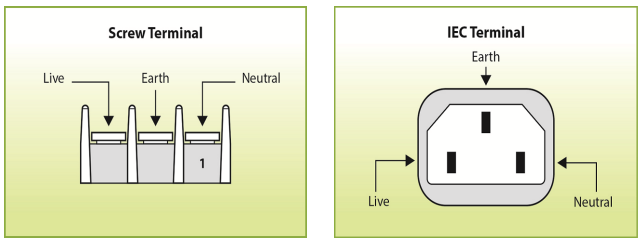
Notes:

A French translation of this Instruction Manual is also available, document number 40117. Contact sales@excelsys.com for a copy of this.
*** = CoolMod variant CmD-X01 is approved for use in only one configuration: CX06M-0DC0-X-A-A.**
**** = CoolMod variants CmE and CmF are 3 slot wide module which plug into slot D only. When a CoolX CoolPac is populated with a CmE or CmF CoolMod the power supply part number will show the CmE or CmF in slot D and have slots B and C marked as unavailable by using the # symbol.**
***** = For CoolMod variant CmG the maximum output power of each channel is 90W, while the output power of both channels must not exceed 120W.**
****** = For CoolMod variant CmH the maximum output power of channel 1 is 36W and channel 2 is 90W, while the output power of both channels must not exceed 100W.**
******* = A 10% derating needs to be applied for this option.**

CoolX Mechanical Drawing



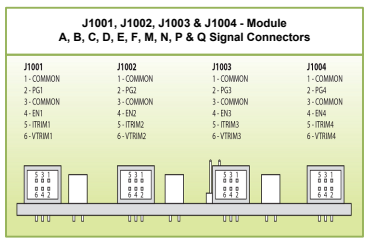
CoolX Input Connectors

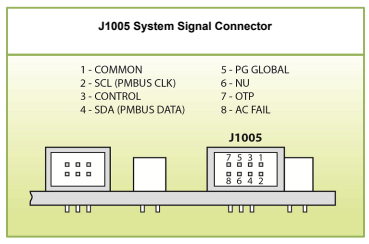


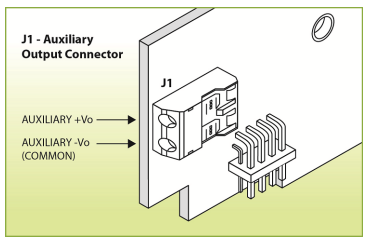
AC mains is applied via 3 Screw Terminal Block or IEC320 Inlet Terminal.
Note: For use in ambient temperatures >60C, a hot condition mating connector and cable must be used.

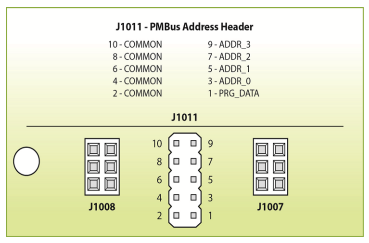
AC/DC Input Terminal Block	TE 2-1437667-S, DINKLE DT-31-B01W-03
AC/DC IEC Input (Option 1)	IEC320 Inlet Qualtek 703W-00/54

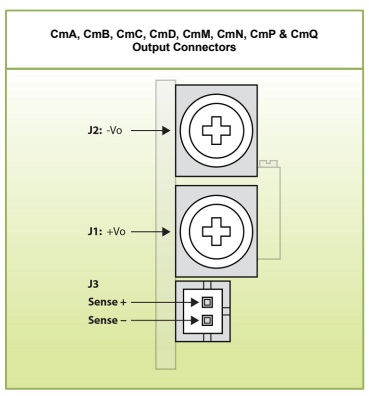
Input Cable and Connector (optional)
Line: Connector Faston Receptacle 6.3 x 0.8mm
Neutral: Connector Faston Receptacle 6.3 x 0.8mm
Earth: Connector Crimp Terminal Ring M3

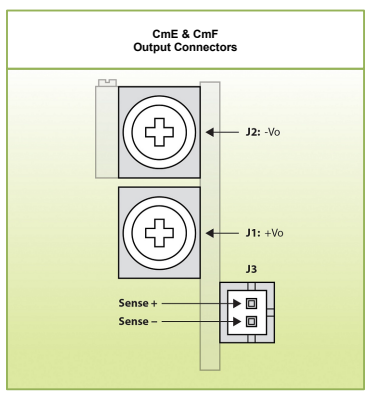


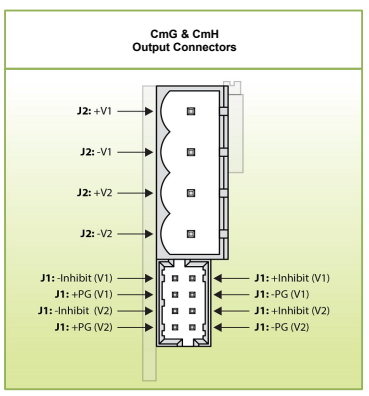












J1001-J1004	6-way Molex 87833-0831
Mating Connector J1001-J1004	Locking Molex 51110-0660; Non Locking Molex 51110-0650 Crimp Terminal Molex p/n 50394 or Molex 51110-0656 which includes Locking Tab and Polarization Key
J1005 System Signal Connector	8-way Molex 87833-0831
Mating Connector J1005	Locking Molex 51110-0860; Non Locking Molex 51110-0850 Crimp Terminal Molex p/n 50394 or Molex 51110-0856 which includes Locking Tab and Polarization Keying
J1 Auxiliary Output Connector	Molex 104188-0210 (solid wire should be used)
J1011 PMBus Address Header Mating Connector J1011	10-way Molex 87758-1016 Harwin M22-1900005

Each CmA,B,C,D,E & F CoolMod DC output has Power Terminals (J1 and J2) and Sense Connector (J3)

J1 & J2 DC Output Terminals	M4 Screws
J3 Sense Connector	JST-S2BPH-K-S (LF) (SN)
J3 Mating Connector	JST PHR-2, Crimp: JST BPH-002T-P0.5S or SPH-002T-P0.5S

Each CmG & H CoolMod DC output has Power Terminal (J2) and Signal Connector (J1)

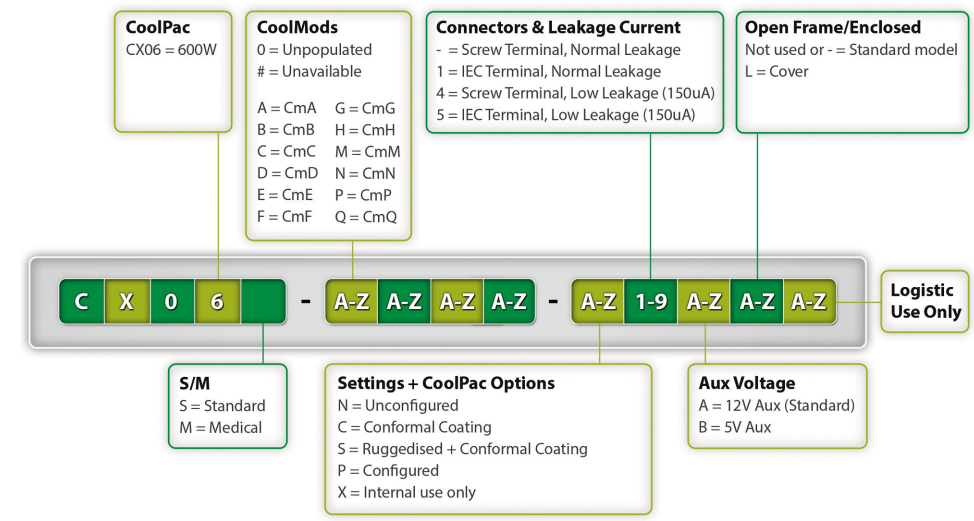
J2 DC Output Terminal	Camden - CTB9350/4A
J2 Mating Connector	Camden - CTB9200/4A or Würth Elektronik - 691 352 710 004
J1 Signal Connector	Molex - 87833-0831
J1 Mating Connector	Housing: Molex - 51110; Crimp Terminals: Molex - 50394

Note: Cables must be rated 105°C minimum.

Labeling and Model Numbers

coolMod
coolMod labels contain:
..Minimum, Nominal & Maximum voltage adjustment range
..Maximum current (Imax)
..Maximum power (Watts)
..Model number
coolPac
coolPac labels contain:
..Input Freq
..Input Voltage
..Fuse rating
..Serial Number
..Maximum combined power rating of inserted coolMods
..Maximum Line current under rated conditions
..Model Number in the format CX06M-0000-N-A as an example of standard medical product part number with no options
..The following warning and information symbols:

CX06 Part Numbering System



When the coolPac has no coolMods inserted, its Model number is simply CX06M-0000-N-A.

When the coolPac has one or more coolMods inserted, its model number may be easily read to be CX06M-AAAB-N-A as an example, where coolMods CmA, CmA, CmA, CmB are inserted in Slots A, B, C, D respectively.

Configuration Considerations

1. When parallel connecting outputs, refer to Designers' Manual for set-up, including Vtrim adjust and I-Share header.
2. When connecting outputs in series to achieve voltages in excess of 60VDC (SELV), ensure that appropriate safety precautions are taken in the system.
3. Before removing and replacing output modules, remove input power for 2 minutes.
4. For proper connection to Inhibit, Enable, Fan Fail, Over Temp alarm, and Output Signals Power Good refer to Designers' Manual.
5. For power derating, refer to Designers' Manual.
6. For motor loads, high inductance, and high capacitance: blocking diode may be needed. Contact Excelsys for support.

Refer to the Designers' Manual and Product Series Catalogue for information on all the above and additional information regarding the set, installation and operation of the CoolX Series.

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