



Technical Manual and Installation Guide

Compressed **P**article **M**odule series

E100CPM/MCU	E100CPM/SU	E100CPM/FU
E200CPM/MCU	E200CPM/SU	E200CPM/FU
E300CPM/MCU	E300CPM/SU	E300CPM/FU
E400CPM/MCU	E400CPM/SU	E400CPM/FU

*Please read and save this instruction guide
for your future reference.*

Made in Australia

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 ***The conditions of use will be automatically accepted by breaking the security label on the product.***

01 Package contents

Inside the package you will find: *(Varies by model)*

1. 1 x CPM/MCU/SU/FU series unit
2. CPM cartridge(s) - (Number based on Model)
3. 4/8 x ceiling mount brackets - (Number based on model)
4. 1 x Alarm panel service label
5. 2 x Labels to indicate device presence [Warning Stickers]
6. 2 x 2-Way insulated terminal connectors (for alarm backup battery connection)

02 Introduction of the product

Enforcer Systems CPM range of products are intended for professional installation to an existing or new building Alarm System. The CPM units are a powerful and effective component of any existing building security system. These devices extend the protection against intruders into the building area where the CPM has been installed. Preventing or reducing valuable products from theft. Your assets have a strong defence against being removed due to heavy vision loss within the area of CPM Unit activation.

In today's ever important area of security, no longer are just alarms able to protect our valuable assets safely. The CPM product adds a valuable addition to any existing site security method. Enforcer Systems CPM range of products are designed to effectively and quickly mask a large area around the point of installation. Making valuables virtually invisible from theft by intruders.

This is achieved by oxidising a special bio-degradable product within an enclosed canister cartridge. The cartridge is fully sealed in a strong metal enclosure. Once the CPM is activated, the dense emission it creates has an unpleasant odour and prevents visibility in the area.

The emission process is high speed and completed in around 12 seconds per cartridge. Filling a wide area in the following seconds, the **Enforcer** CPM will obscure vision, repel intruders and protect your valuable assets from theft. The dense cloud particulate will remain in the air preventing visibility for around 30-45 minutes per activation, ensuring that intruders remain out of the area.

CPM (Compressed Particle Module)

More about the product and features.

This technology consists of compressed food grade powders within a compact metal cartridge. When triggered, the content powder will burn in a very efficient manner.

The dense particulate created has a slight smell and effect similar to smoke which rapidly fills the enclosed area preventing visibility and repelling intruders.

Security benefits: -

- Eliminates visibility in the protected area
- Extremely fast deployment and will spread to a wide area
- Unbearable to remain in the area
- High performance product, compared to similar products in the market
- Low-cost replacement cartridges

This product type within the security industry is: -

Recognised by Insurance companies in Australia as an effective intruder defence mechanism. Minimising asset loss. Recognised support system in crime prevention and highly recommended by police. Acceptable as a legal form of product asset protection.

03 Conditions of use and warnings

- Ensure you fully read the safety documentation, Technical manual and Installation guide before installing and using this product.
- This product is not intended for installation by unqualified persons.
- Always ensure that input 12V DC power is not applied during the installation stage and check all connections are correctly made prior to the commissioning process.
- If any of the supplied product appears to be damaged through transport or other accident, do not install and consult the supplier for remedy.
- During the installation and commissioning stage, ensure that the product is never pointing towards your face while installing the cartridges.
- Once the installation is completed and the CPM is triggered, the CPM cartridge canister (at the time of activation) will become hot. With a dense particulate emission quickly filling the room. Care must be taken when handling, connecting or disconnecting this product.
- Always ensure that the System Service Mode On/Off switch is On during any service or adjustment of the product.
- Never install or place the CPM product near water spray areas, or where water may contact the device.
- This CPM device is not intended to be installed outdoors.
- This CPM device when triggered, may activate smoke alarms in the area of coverage. The CPM device emission has a similar characteristic to smoke.
- Only after the product is installed, commissioned and tested should the cartridge be connected. Pre-check that 0V DC (no power) is present at the connector.

04 Installation Recommendations and tips for CPM

Please observe the following instructions when installing and commissioning the Enforcer Systems E100/200/300/400 CPM range.

 This product must only be installed by trained professional technician.

1. This product must not be installed to obstruct escape routes or exits.
2. Always verify that the CPM unit activation does not limit visibility near stairs or landings.
3. Do not look directly into the emitter nozzle.
4. Do not modify or tamper with the CPM unit cartridge.
5. The CPM emitter nozzle and Cartridge may be hot after activation. Do not touch for the following 20 minutes after activation.
6. If the CPM triggers, it will start producing a dense white particulate, do not remain in the area. Exit until the particulate has cleared.
7. Upon completing installation of the CPM unit, you must inform your local fire brigade that this system is permanently installed and linked to the alarm/security system. You must also inform local Fire Brigade if you intend to test trigger the CPM Cartridges.
8. Ensure that a minimum of 2 metres is between the CPM emitter and any obstacle.
9. Do not install the CPM Unit at a height easily reachable. 2.4m to 3.6m from the ground is recommended. Maximum installation height is 8m when inbuilt detector is not utilised. (A replacement SEC-TRIG must be installed in a suitable position).
10. It is strongly recommended that all CPM condition outputs are connected to, 24hr silent alarm zones.
11. Upon completion of installation, the Alarm system and link to CPM must be tested for correct operation, without the Cartridge connected. Confirm disconnection of cartridge prior to system testing.
12. Once all aspects of the system have been inspected and tested, then connect and install the cartridges for live operation.

- 13.** When servicing this product, always switch the System Service Mode On/Off to the On position, this will ensure that there will be no accidental firing of the CPM. Remember to switch the System Service Mode to the Off position once all servicing and tests are complete.
- 14.** Enforcer Systems Australia recommends that all instructions are re-read and understood prior to every CPM installation and service.

05 Technical specifications

TECHNICAL SPECIFICATIONS									
	COMPRESSED PARTICLE CONTENT	COVERAGE AREA	DEPLOYMENT PERFORMANCE	ACTIVATION METHOD	CERTIFICATION	OPERATING HUMIDITY	OPERATING TEMP		
CPM Master Unit	SOLID DRY COMPRESSED FOOD-GRADE PARTICLES	DEPENDENT ON MODEL 100 to 400 m ³	12 to 24 SECONDS (Depending on Model)	ALARM CONTROL OR MANUAL DURESS BUTTON	CE, ISO 9008, ISO 14002, ROHS, Non Toxic Test Report	10% to 75% (Non-condensing)	-10°C to 60°C		
CPM Sub Unit CPM Filler Unit									
	STAND-BY POWER USE (AVERAGE)	POWER CONSUMPTION (DURING SHOT)	POWER CONSUMPTION TIME PERIOD	VAPOUR DURATION TIME	COMPLETE AREA COVERAGE	POWER INPUT	CURRENT DRAW STANDBY	CURRENT DRAW ACTIVE	 NEVER CONNECT MORE THAN 1 CPM CARTRIDGES TO A SINGLE ALARM CTG OUTPUT..
E100CPM/MCU Master E200CPM/MCU Master E300CPM/MCU Master E400CPM/MCU Master	0.86 W	11.68 W	4 SECONDS MAXIMUM	30 TO 45 MINUTES	12 TO 24 SECONDS	12V DC TO 15V DC	68 mA	920 mA 4 SECONDS	
E100CPM/SU Sub E200CPM/SU Sub E300CPM/SU Sub E400CPM/SU Sub	0.62 W	11.4 W	4 SECONDS MAXIMUM	30 TO 45 MINUTES	12 TO 24 SECONDS	12V DC TO 15V DC	49 mA	850 mA 4 SECONDS	
E100CPM/FU Filler E200CPM/FU Filler E300CPM/FU Filler E400CPM/FU Filler	0 W	10.8 W	4 SECONDS MAXIMUM	30 TO 45 MINUTES	12 TO 24 SECONDS	12V DC TO 15V DC	0 mA	850 mA 4 SECONDS	

Additional Technical Specifications: *Passive Infrared Detector*

Auto Temperature Compensation	NIC Compensation
Installation Height	Approx. 2.4m ~ 3.6m
Detection Distance	Approx. 9m
Detection Angle field	360 degrees
Operational Temp / Humidity	-20 to 50 degrees C / 95%

06 Description of Board input and output

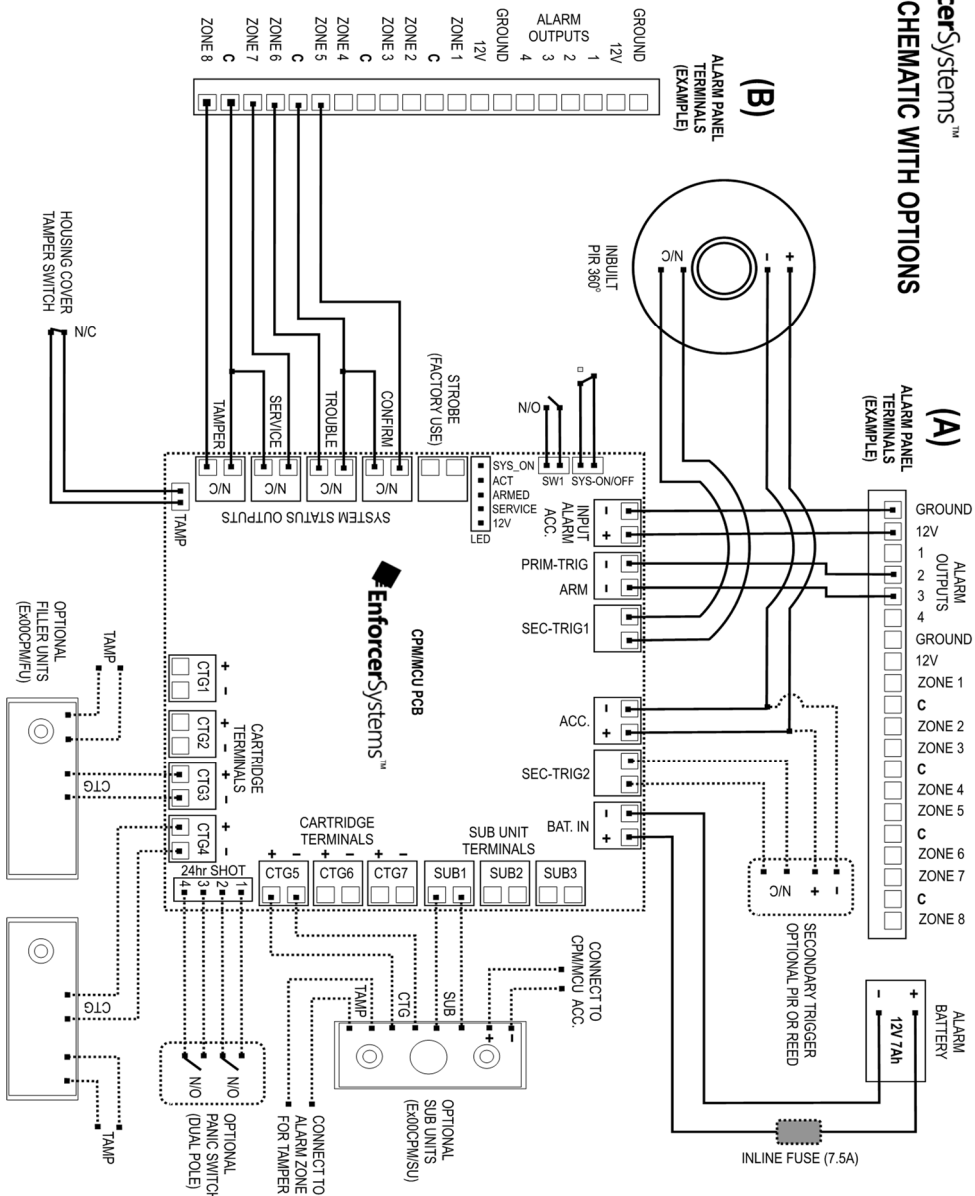
- **INPUT.** Is for 12v input from alarm/security system. This will supply power to the CPM board's main functions. Approximate 68mA is required.
- **ARM.** A GND to this terminal will Arm the CPM unit (this acts as a safety feature). While a GND is connected to the ARM terminal, the unit is in the Armed state. The GND for this terminal will usually be supplied via a programmable output on your alarm/security system.
- **PRIM-TRIG.** If the CPM unit is Armed, a GND to this terminal (usually coming from an alarm output) will put the CPM unit into a ready to fire state.
- **SEC-TRIG1.** Is used as a final trigger for the CPM unit, and is connected to the onboard 360° pir.
- **ACC.** Is a 12v positive and GND supply, used to power the onboard 360° pir and the optional SUB units.
- **SEC-TRIG2.** Can be used in conjunction with SEC-TRIG1 as an additional Zone input. This can be activated via Dip switch 1.
- **BAT-IN.** This input is to be connected to the security systems backup battery directly. This input will supply 12v & GND to CTG1 to CTG7 (when needed) Only. The in-line fuse provided must be installed at the Battery end.

- **SUB1, SUB2 and SUB3.** Are used to operate CTG5, CTG6 and CTG7 respectively. When the CPM is in the armed state, and PRIM-TRIG is given a GND, SUB1 will operate CTG5, SUB2 will operate CTG6 and SUB3 will operate CTG7, via the Sub Units onboard PIR sensor.
- **CON.** Is a COM & NC dry contact going to momentary Open when any of the CTG's (cartridges) have fired. It is used as a conformation signal.
- **Trouble.** Is a COM & NC dry contact going to an Open state, when 12V & GND **INPUT** or 12V & GND **BAT-IN** drop below 11.8V. This will go back to a NC state when both 12V & GND INPUT and 12V & GND BAT-IN are back over 11.8V. The Trouble contact will also go to an open state if the System Service Mode On/Off switch is On.
- **SERVICE.** Is a COM & NC dry contact going to an Open state when any of the CTG's have fired. This will go back to a NC state only after the service button has been pressed.
- **TAMPER.** Is a COM & NC dry contact going to an Open state when the cover has been removed. This will go back to a NC state when the cover is replaced.
- **CTG1 to CTG4.** Are outputs used to fire the cartridges. The firing sequence is controlled by Dip switches 3 and 4. Optional filler units can be connected for larger areas or for extra firing sequences. Please see Page 12, Section **09 Dip switch selection.**
- **24H SHOT.** Is a 4 pin Input designed to be used as a 24h panic. Pins 1 & 2 are trigger 1 and pins 3 & 4 are trigger 2. If trigger 1 (pins 1 & 2) **and** trigger 2 (pins 3 & 4) are given a momentary short (does not have to be at the same time), the CPM will fire. The CPM does not need to be in Armed State.

Please note, that with this feature (**24H SHOT**) the CPM can be used as a stand-alone panic unit. Please refer to the wiring diagram on Page 9, Section **07 Connection examples.** Pins 1 & 2 should never come into contact with pins 3 & 4.

07 Connection example

Enforcer Systems™
WIRING SCHEMATIC WITH OPTIONS



⚠ The Connection example section illustrates connections to an alarm/security system. The diagram and example is provided for your understanding of the operation of inputs/outputs.

E100/200/300/400 CPM Cabling recommendations

• Battery Cable (Fig-8)

Fig 8 24/0.20 (0.75mm²) or equivalent up to 40m total distance to the furthest CPM unit.

Fig 8 48/0.20 (1.5mm²) or equivalent up to 100m total distance to the furthest CPM unit.

** NOTE: Battery cable runs are absolute maximum distances from alarm panel to the furthest device in the field.*

• Control Wiring

4 Core / 6 Core, 14/0.20 Security Cable.

- Alarm panel terminals example **A** is an illustration of standard connections to alarm outputs for 12v supply and control of the CPM.

- Alarm panel terminals example **B** is an illustration of standard connections to alarm inputs for the use of status reporting.

- The **INPUT**, **PRIM-TRIG**, **ARM** and **BAT-IN** are required for the default operation of the EnforcerSystem CPM. Please refer to Page 7, Section **06**

Description of input and output for a complete understanding of how the inputs and outputs operate.

- When connecting **BAT-IN** to the alarm/security systems backup battery, you must use minimum 24/0.20 Fig-8 2core or equivalent. The Fig8 2core cable coming from the BAT-IN must be connected to the backup battery via 2 x 2-way insulated spade connectors (provided). The 2-way spade terminals should be connected to the Fig8 2core. The alarm/security system can then be plugged back in.

- The alarm/security system output connected to the ARM input of the CPM, must be programmed to give a latched GND while the alarm/security system is in the armed state, and to remove the GND while in the disarmed state. While in the armed state, the blue status Led will light up to indicate that the CPM is armed.

- The alarm/security system output connected the PRIM-TRIG must be an alarm output GND (e.g., internal siren GND). The primary trigger is used to put the CPM into a “ready to fire” state.

- The SEC-TRIG1 is connected to the inbuilt 360° pir detector. The secondary trigger 1 is used as a final trigger to fire the CPM unit.

- The SEC-TRIG2 can be connected to an additional detection device to allow for greater flexibility and stability. Please see Page 12, Section **09 Dip switch selection**.
- The SUB unit terminals allow the flexibility option to connect up to 3 CPM/SU (SUB units). **SUB1** operates in conjunction with CTG5, **SUB2** operates in conjunction with CTG6 and **SUB3** operates in conjunction with CTG7. Please see Page 12, Section **09 Dip switch selection** for SUB pulse count.
- The 24hr-SHOT terminals are used as an instant shot, and can activate a firing sequence regardless of whether the CPM is armed or dis-armed.

08 Status Leds meaning

- **System Service Mode ON/Off.** The **Green** Led is to indicate that the CPM is powered and ready, and that the System Service Mode On/Off is in the Off position. The **Green** Led will turn Off, and the Trouble output will go to an open state to indicate that the CPM is in Service Mode. Cartridges cannot be fired while the Service Mode is On. The system Service Mode On/Off is used during servicing to ensure no accidental firing of the CPM.
- **ACT.** The **Red** Led will light up momentarily to indicate a firing sequence has started, including any of the SUB-Units. This Red Led is used for testing once installation is complete. ***The cartridge should not be installed prior to testing.***
- **ARMED.** The **Blue** Led will light up to indicate that the CPM has been armed by the alarm/security system. The Blue LED will stay on until the alarm/security system has been disarmed.
- **SERVICE.** The **Orange** Led will light up if any of the CTG's have fired. Once fired, a CTG cannot fire again until reset. The orange Led will stay on until the Service reset button has been pressed.

09 Dip switch selection

By default ALL Dip Switches are in the OFF position.

Dip 1) Off = ARM + PRIM-TRIG + SEC-TRIG1 are needed to fire CTG1-4 in sequence.

On = ARM + PRIM-TRIG + SEC-TRIG1 + SEC-TRIG2 are needed to fire CTG1-4 in sequence. Both SEC-TRIG1 and SEC-TRIG2 will need to go to a momentary Open state within 3 minutes of each other to fire CTG1-4 in sequence. After 3 minutes, the time will reset.

Dip 2) Off = Single hit on SEC-TRIGs is needed.

On = Double hit on SEC-TRIGs is needed.

Dip 3) Off = Normal firing sequence of CTG1-4.

On = If conditions are met, Only CTG1 and CTG2 will fire in sequence. If at any time the PRIM-TRIG loses its GND and regains its GND (ie: if the output connected to the PRIM-TRIG is reset) the firing sequence will continue on to CTG3 and CTG4.

Dip 4) Off = No change.

On = If conditions are met, Only CTG1 will fire. Each time the PRIM-TRIG loses its GND and regains its GND (ie: if the output connected to the PRIM-TRIG is reset) the firing sequence will continue on to the next CTG. This dip will override Dip 3.

Dip 5) Off = No change.

On = The STROBE output is no longer triggered via PRIM-TRIG, instead it is triggered via any activation of CTG1-7 for a duration of 5 min then resets ready for the next CTG activation.

Dip 6) Off = When conditions are met, a single hit (momentary Open circuit) on SUBs is needed to fire CTG5 – 7

On = When conditions are met, a double hit (2 x momentary Open circuit) on SUBs is needed to fire CTG5 – 7

10 Cartridge replacement, test and reset

⚠ *Never replace a cartridge straight after it has fired! Allow at least 20 min for cool down.*

- When replacing any cartridge, the technician must ensure that the alarm/security system is in the disarmed state and that it will not be armed any time during the service.
- There is a System Service Mode On/Off switch under the front cover. The Service Mode On/Off switch must be turned On during any service of the alarm/security system. The cartridges cannot be activated while the Service Mode is On. While the Service Mode is On, the Green System Ready Led will turn Off and the TROUBLE output will go into alarm to indicate that the CPM is in Service Mode. They will both reset once the Service Mode is returned to Off.
- When replacing the cartridges, you must always (after removing all cartridges in the CPM unit) switch the Service Mode Off, press the service reset button, and test all cartridge output terminals for 0-volts on standby. Once all tests are complete, you should turn the Service Mode On/Off switch to On, install fresh cartridges, then push the service reset button. Turn the Service Mode On/Off switch to Off and reinstall the cover plate.

All CPM condition zones should have cleared once the service is complete.

⚠ *We strongly recommend that safety glasses are to be worn during servicing of the CPM unit!*

11 Maintenance

- Maintenance check should be carried out on the CPM unit at the same time as maintenance testing on the connected alarm/security system is scheduled. This may be 12 or 24 month intervals.
- While conducting any test or preventative maintenance of the alarm/security system, the System Service Mode On/Off must be in the On position to insure no accidental firing of the CPM cartridges. While the Service Mode On/Off is in the On position, the TROUBLE output will trigger. The TROUBLE output will restore once the Service Mode On/Off is back Off.
- With the Service Mode On/Off in the On position, remove all CPM cartridges. Test all cartridge outputs for 0-volts, switch the Service On/Off to Off, and test for 0-volts again.
- With all cartridges removed and the Service On/Off switched to Off, connect a multimeter to cartridge output terminal, Arm the alarm/security system, trigger the alarm and trigger the CPMs pir. For each cartridge output you should see 5v on activation. Test all cartridge outputs. Remember to press the service reset button between tests. Depending on Dip switch selection, you may need to disarm and re-arm the alarm/security system without pressing the service reset button to test the next firing sequence.
- When testing the cartridge outputs, it is very important to fully understand how the Dip switches effect the firing sequence.
- On completion, switch the Service Mode On/Off to the Off position and press the Service reset button. All CPM condition zones should have cleared once the service is complete.

 We strongly recommend that safety glasses are to be worn during servicing of the CPM unit!

Max. amount of Sub & Filler Units per Master Unit

By fully optimizing system configuration you can achieve long cable distances between alarm panel battery and CPM Units.

- Max. amount of Sub Units per Master Control Unit (MCU) is three in total.
- Max. amount of Filler Units per each Master Control Unit (MCU) varies and is dependent by the overall system configuration. Maximum of three Filler Units in total.

Battery state of charge (SOC)

The CPM is heavily dependent on the alarm backup battery. Although the CPMs current draw is very minimal on standby, it is recommended to make sure that the backup battery terminals are in good mechanical condition and that there is a good connection between all terminals.

Some important points to remember: -

- Always be mindful of the batteries SOC (State Of Charge) and be sure it is always in good condition.
- If the battery backup charging circuit is down (AC power fail), the battery should perform for a minimum of 12 hours. This is standard industry backup time with AS2201-1 being 16 hours on Monitored alarms. With a CPM attached to the alarm circuit, this will have minimal effect on the backup battery SOC. As a single CPM unit draws (on standby) low current (68mA).
- In situations such as, the alarm/security system is operating on backup battery only, it is important to understand that if the alarm is in an alarmed state (sirens and strobe activated) and the CPM is about to be triggered, there will be a greater load on the backup battery, so there must be an adequate battery SOC. Understandably, in such an event it may be difficult to determine the battery SOC as there are many variables, such as, the age of the battery, temperature, the standby load of the alarm and CPM, and the number of hours in operation without AC power prior to the event. Taking all of the above into account, a healthy backup battery should perform for a minimum of 12 hours with a CPM attached.

12 Faults and possible solutions

Defect Found	Possible Cause and Solution
Main board does not power up	The CPM main board must have 12V positive and <u>GND</u> from the ACC output of the alarm/security system connected to the 12v INPUT (input Alarm Acc.), and 12v positive and Gnd from the Battery of the alarm/security system connected to the BAT-IN. When connected correctly you will see 5 Leds light up on the main board labelled, 12v, 5v, 3v3, LED1 (blinking) and BAT-IN. Ensure that both positives and Gnds are correctly orientated. The Green System ready Led will also be On, while the System Service switch is Off.
Status Leds do not light up	If the Green System Ready Led does not light up, ensure that the System Service Mode is Off, and that the CPM is powered correctly. Also ensure that the 5 pin Led connector is properly connected to the CPM PCB.
The CPM does not ARM	The ARM input needs a <u>GND</u> , coming from a programmable output on the alarm/security system. The output must be programmed to give a latched <u>GND</u> while the alarm/security system is in the armed state, and remove the <u>GND</u> while the alarm/security system is in the disarmed state.
The CPM does not fire	<i>Always test with cartridges removed.</i> For a cartridge to fire, there are only 4 parts needed, 1. 12v supply to INPUT and BAT-IN. 2. A <u>GND</u> to ARM. 3. A <u>GND</u> to PRIM-TRIG. 4. SEC-TRIG1 going to an open state (Dip switch's dependent). See 07 Dip switch selection. See 09 Wiring examples to ensure that the CPM is connected correctly. Check to see if all Leds on the main board are On (12v, 5v, 3v3, LED1 (blinking) and BAT-IN). Check that the System Service Mode is in the <u>Off</u> position and that the Green System Ready Led is <u>On</u> . Check that the Orange Service Led is <u>Off</u> . Push the Service Reset button to reset service mode (See 08 Leds meaning). Check to see that Dip 1 is in the correct position (See 07 Dip switch selection and 09 Connection examples). When conducting final tests, connect a volt meter to the cartridge output terminals to test for 0v at steps 1, 2 and 3 and 12v at step 4 . Remember to press the Service Reset button between tests.
The CPM fires immediately after arming	The CPM can only fire directly after arming if, the ARM and PRIM-TRIG doth receive a <u>GND</u> on arming, and if the SEC-TRIG1 terminal is in the open state. See 09 Connection examples. Check to see if the inbuilt 360° pir is in the open state.
SUB 1 to 3 are not firing CTG 5 to 7	SUB 1 operates CTG 5, SUB 2 operates CTG 6 and SUB 3 operates CTG 7. The SUB inputs operate the same way as SEC-TRIG1, as in, the CPM must be armed (GND to ARM) and the PRIM-TRIG must be active (GND to PRIM-TRIG) before a SUB can fire its CTG. See 09 Connection examples and 07 Dip switch selection (DIP 6). If a CTG has fired it will not fire again until the Service reset button has been pressed.
24H SHOT does not fire	The 24H SHOT terminal is used as a 24H panic option and will fire the CTGs regardless of whether the CPM is armed or disarmed. See 09 Connection examples.

13 Warranty

Enforcer Systems Australia Pty Ltd offers a three-year parts warranty on our Enforcer CPM product range. Not included as warranty: damage caused by incorrect use of the CPM unit. All warranty issues are handled via the solution partner network dealer, reseller or system integrator and installer.

⚠ The conditions of use will be automatically accepted by breaking the security label and/or opening the CPM unit.

Details needed for warranty

Serial number.....

Date of installation.....

Company name and phone number.....

Installer name and signature.....

⚠ All details must be filled out on the completion of the installation.

Notes

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Hard Wired Solution to any Alarm System

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