

This manual provides brief instructions for installing and connecting the CM9001-EMS Controller. The instructions for programming & configuring CM9001 can be found in the CM9001-EMS Programming Manual. Please download the latest version of both Installation and Programming manuals from http://www.cytech.biz/product_details.php?item_id=505

What is Included

- OP03 output submodule plug-in submodule provides 8 outputs.

Additional Options

- KP04AE– LCD Keypad displays up to 8 Sensors (eg Temperature, Humidity, Water Leakage etc) from MSM01 or other sensors. Min Firmware 7.014. Keypad does not have a built-in sensor.
- KP04AET - LCD Keypad displays up to 8 Sensors (eg Temperature, Humidity, Water Leakage etc) from MSM01 or other sensors. Min Firmware 7.014. Keypad has a built-in temperature sensor.
- LEM02B Local Expansion Module - 8 inputs 0 outputs can be plugged in to CM9001 to provide 8 Inputs. This does not obstruct any connectors LED, or Buttons
- The ETH03 submodule can be plugged into the ETH connector/header to act as a UCM/ETH03 without the need for a UCM/ETH03. This does not obstruct any connectors LED, or Buttons. UCMs can still be added.
- EN01D Metal Enclosure with TT01-0022 Universal Power supply 90-260 VAC Input, 15VDC 1.8 A Output. CM9001 is PCB only without metal box or power supply.
- MSM01 Multi-sensor Module with Built-in Temperature, Humidity Sensors and 2 Inputs for Water Leakage Detection Cables, in DIN Rail Housing. Min Firmware 7.004
- UCM/Pi Interface to Raspberry Pi, for Graphical Display of Sensor values,, automatic daily email of sensor values

Introduction to CM9001

Please refer to the Hookup Diagram supplied with CM9001.

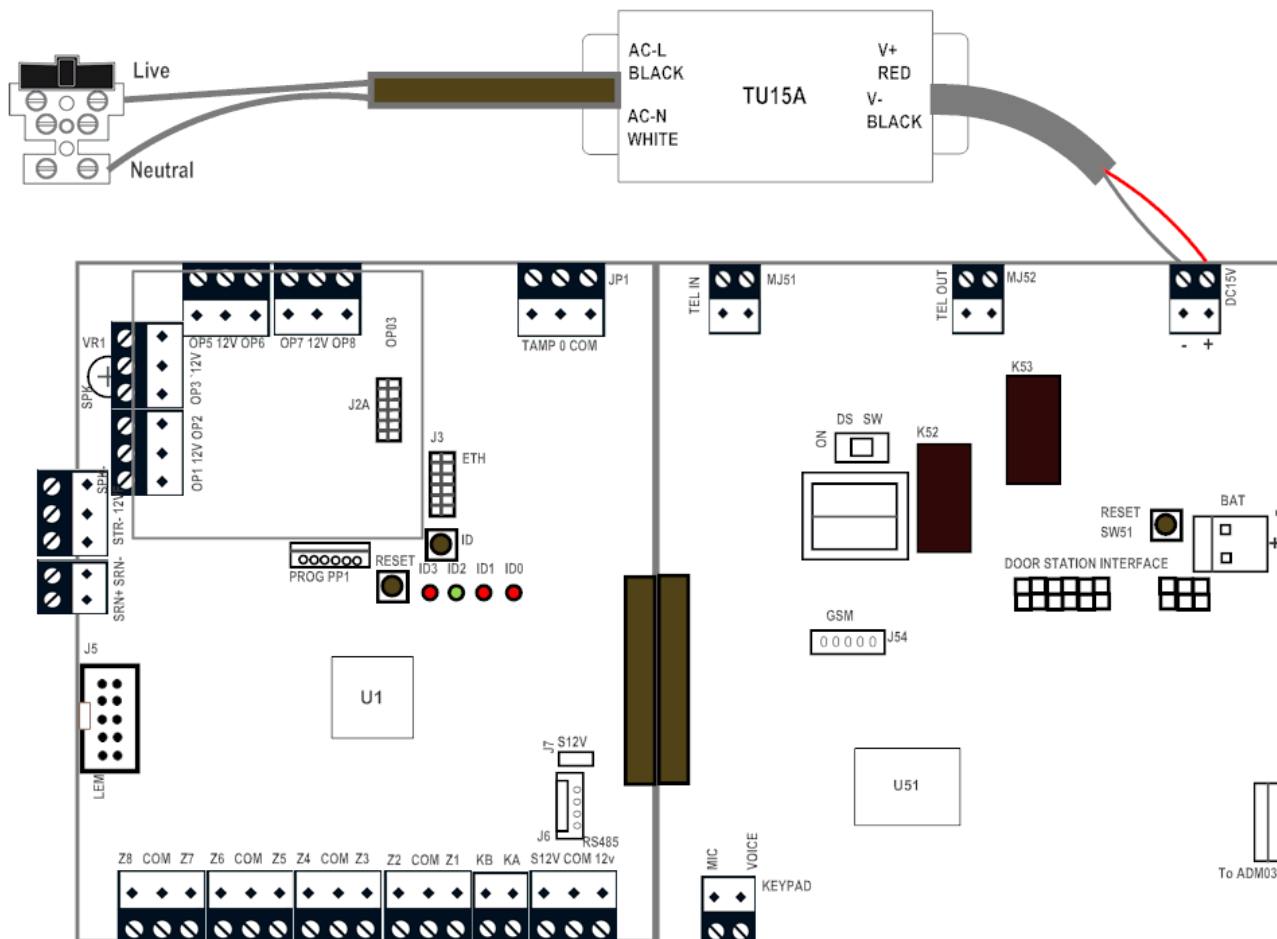


Figure 1 - CM9001 PCB with TU15A transformer

This is to be pasted on the Lid of the CM9001 Enclosure.

LED Indicators

- ID1 (Red) LED - If Steady, system is armed. If Flashing, system is in Alert or Alarm state.
- ID2 (Green) LED - If Steady, system is disarmed. If Flashing, system is in Trouble State.
- ID0, ID3 – No function

RED (ID1)	GREEN (ID2)	STATUS
Off	On	Disarmed, Normal
Off	Flash	Disarmed, Trouble
On	Off	Armed, Normal
On	Flash	Armed, Trouble
Flash	Off	Alarm, Armed
Flash	Flash	Alert/Alarm, Trouble
Flash	On	Alarm, Disarmed
Off	Off	Fault, No Power, UCM Programming cable is connected
On	On	U4 File System Mismatch

Connections - Analog Section (Right Side)

- 15VDC (JP51) - Connected to TU15A Universal Power Supply 15VDC 1.8 Amps
- BATT (JP52) - Connected to 12V 7AH Sealed Lead-Acid Battery via supplied Battery cable.
- TEL IN (MJ51) - Connection to Telephone Line

- TEL OUT (MJ52) - Connection to Local telephones
- KP MIC/VOICE (JP53) - connection to Keypads MIC/VOICE
- GSM (J54) - connection to UCM/GSM Module audio signals.
- J104 - Door Station Interface Plug in module for Ringer/Local Phone Control
- J53 - To ADM03 module

Connections - Digital Section (Left Side)

- TAMP/0/COM (JP1) - Connection to Tamper of Panel and Siren/Bell box. Not in use for CM9001-EMS.
- Z1/COM/Z2: Zones 1-2 input connections
- Z3/COM/Z4: Zones 3-4 input connections
- Z5/COM/Z6: Zones 5-6 input connections
- Z7/COM/Z8: Zones 7-8 input connections
- KA/KB (JP8) - RS485 connection to keypads, UCMs and other modules (2 position terminal block). Use WA485 4 way cable and J6 for short distances.
- SRN+/SRN- (JP9) - Siren/Bell Connection (12V), SRN- terminal is the negative trigger, SRN+ is fixed 12V.
- STR/12VF/SPK (JP10) - Speaker and Strobe Connection for Speaker and 12V Strobe Light. Centre pin is at fixed 12V. STR and SPK go to 0V when triggered (negative trigger).
- OP1/12V/OP2 (JP11) - Output 1, 2, centre 12V common (On OP03)
- OP3/12V/OP4 (JP12) - Output 3, 4, centre 12V common (On OP03)
- OP5/12V/OP6 (JP13) - Output 5, 6, centre 12V common (On OP03)
- OP7/12V/OP8 (JP14) - Output 7, 8 centre 12V common (On OP03)
- RS485 (J6) - 4 way connector for RS485 modules eg UCM, SEM, RIO for short distance only using 4 way cable (WA485)

Plug-in Submodule Headers

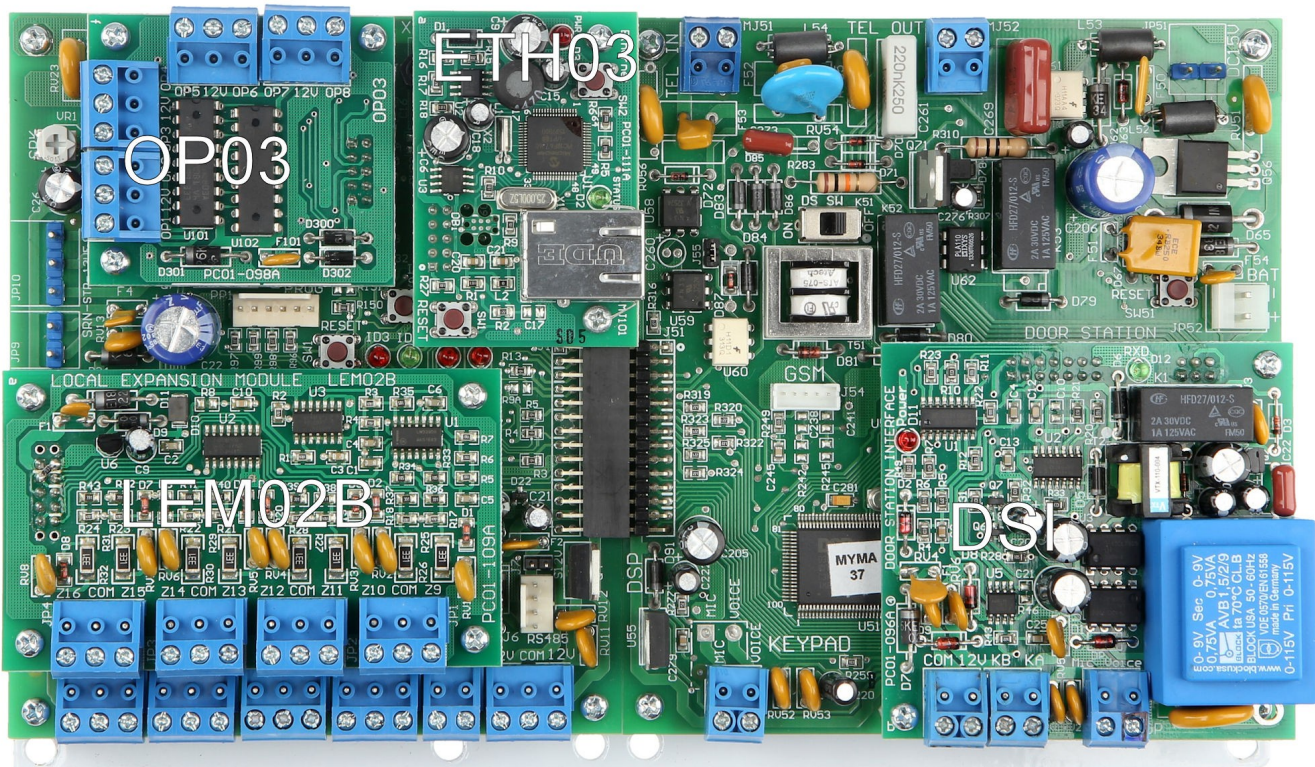


Figure 2 – Submodules Mounting Location

- OP03 (J2A): Connector/header OP03 plug in Output driver.
- LEM (J5): Connector for LEM02B Plug-in board or ribbon cable to LEM01/LEM02.
- ETH (J1): Connector/Header for ETH03 submodule.
- DSI: not applicable for CM9001

Buttons/ Jumpers - Digital Section (Left Side)

- Reset: This resets the CM9001 but doesnot affect programmed setings.
- ID Pushbutton - Not Used for CM9001
- S12V – shunt if S12V output is not to be switched. This means S12V is continuous 12V output and cannot be switched off
- SPK (VR1) trimmer - adjusts volume of the speaker on SPK/COM output (not BELL)

Shunts/Settings - Analog Section (Right Side)

- **K51 Slide Switch - set to ON position at all times.**
- BATT (SW51)- Press to connect backup battery if connected without the DC Input voltage at 15VDC turned on. If the DC Input voltage is off and a backup battery is connected, the battery voltage is not applied to the system until the BATT switch is pressed. Use a non-conducting tool, eg a pen to press this as it is not easily accessible

Installation

Location and Mounting of Panel

The product should be mounted in a dry area, with access to an AC Mains power source and incoming telephone line.



Note that other modules like UCM should be mounted in the enclosure first as they require metal standoffs which need access to the back of the enclosure

Mount the enclosure securely to a brick wall using Number 8 - 25 mm long screws to the 3 mounting holes. Do not switch on or connect the backup battery until all other wiring is complete. Take precautions against damage by static discharge by using an antistatic wrist strap tied to a suitable earth point

Transformer

For Australia and New Zealand, the Power Supply should be approved 3 pin plug pack TT01-0023. The plug pack should be connected to a socket with a protective earthing connection

Backup Battery (JP2)

Connect a 12V 7 AH sealed lead-acid battery to the BATT (JP2) terminals using the supplied Battery Cable. This will give more than 24 hours of standby power to the system if 200 mA or less of auxiliary current is used. Do not connect the battery until all wiring is completed.

Cable Routing / Requirements

The minimum cable type to be used for detection devices, siren or sounders should be 6-core alarm cable (7/0.2mm). This has a resistance of approximately 8 ohms per 100 meters. Shielded Twisted pair (STP) CAT 5 cables are recommended for Keypads. Each cable runs from the panel separately, in a star or home-run configuration. Use of untwisted/unshielded cables may cause noise interference to be heard on the Keypad

Where spare conductors are available in multicore cable runs, they should be used to double-up the 12V power supply cables to the each control station to reduce circuit resistance and further improve current performance. **Ensure that all RS485 communication lines and detection circuit cables are kept away from mains supply cables.**

Speaker and Strobe (Optional)

Connect a 12V strobe to the 12VF and STR- outputs if needed. Observe the polarity. In the event of an alarm, the strobe is turned on until the system is disarmed. The Strobe and speaker terminals have a combined current limit of 1 A, protected by a resettable fuse (F3)

→ The backup battery must be connected for the Siren to work properly.

An 8 ohm 5W (minimum) speaker may be connected to the SPK- and 12VF terminals. This is normally not required for CM9001-EMS

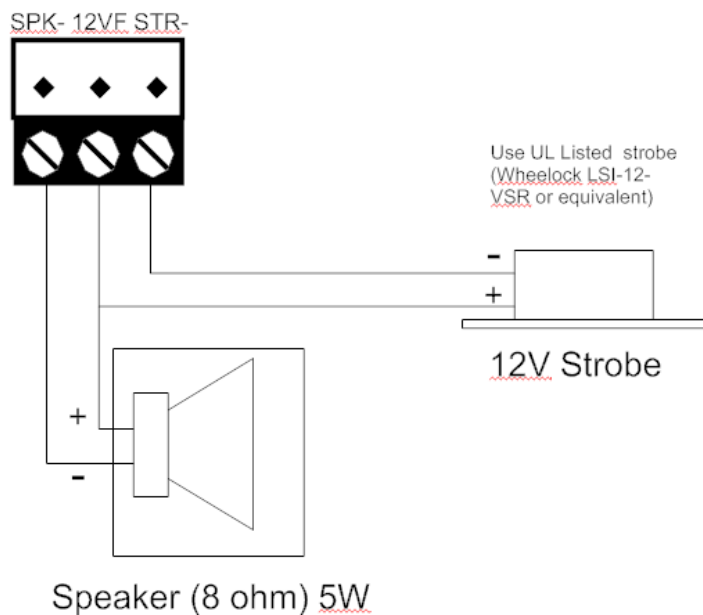


Figure 3 - Speaker and Strobe connection

The speaker may be used as an internal siren but is normally not required.

Siren (JP9) Optional

SRN+ Siren (+) output has constant 12 volts to be connected to the Siren box

SRN- Siren (-) output is normally floating, but pulled to ground to activate siren.

The Siren is optional in CM9001-EMS

Telephone Connections

Connect the incoming telephone line to the TEL IN Terminal Block. Connect the telephone wires going to the local phone(s) to the TEL OUT Terminal Block. The system will work with any DTMF telephone.

Telephones, facsimile machines and other telecommunications equipment may be connected to the Telephone OUT socket.

➔ **Do not connect any other equipment between the incoming telephone line and the control panel. Also, do not connect any other**

telephone equipment including fax machines and PABX in parallel with the control panel. Violating the above rules may prevent the control panel from seizing the telephone line to dial out during an alarm condition.

Parallel Phone Connections

Equipment should **not be connected in parallel to the TEL IN connector**.

Tamper Input (JP1)

Tamper input is normally not used for CM9001 and is disabled by default.

Alternatively, any zone may be programmed as a Tamper zone type.

Zone Input Terminals Z1-Z8

Important: UCM Minimum Firmware is 7.098 to select EOL configuration

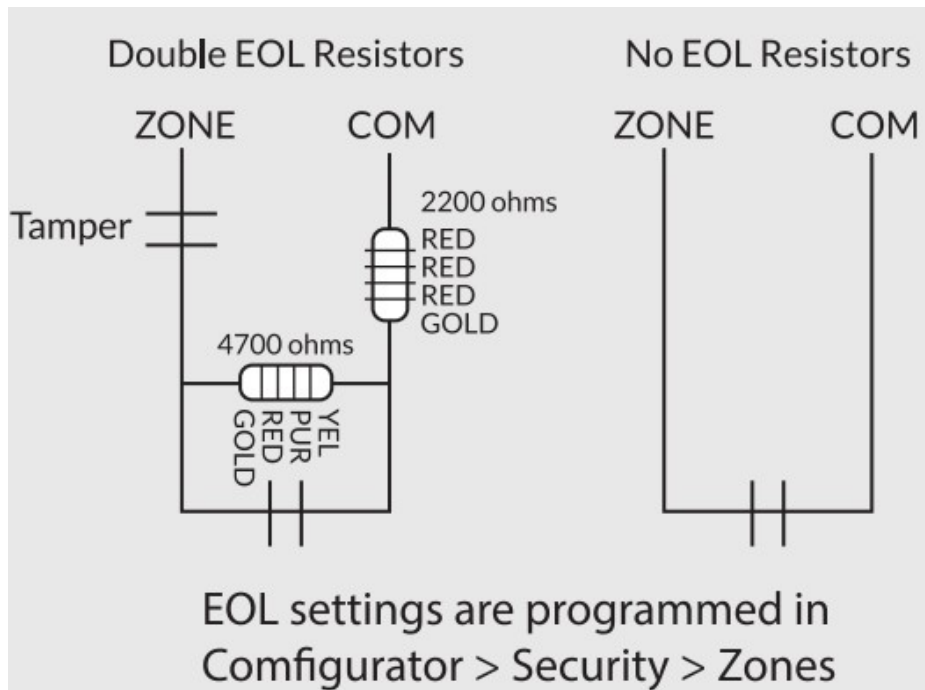


Figure 4 – EOL Resistor Connections

Each zone may be wired as Normally Closed (NC) or Normally Open (NO). Any unused zones should be programmed as Zone Type 0

➔ **Normally Open and Normally Closed contacts cannot be connected to the same zone.**

The 2 EOL resistors should be connected at the contact and not at the control panel. With 2 EOL resistors connected in this way, the system is able to distinguish open and closed contacts from open circuit and short circuit wiring for supervision of the zone contacts. Any short or open circuit fault will trigger a Zone Trouble Alarm which can be reported to the programmed phone numbers. The table below shows the expected values of circuit resistance for open and close conditions.

Status	Zone Resistance (Ohms)
Closed	2 K 2
Open	7 K 4

Output Terminals OP1 - OP8

Each of the 8 outputs may be connected to infrared LEDs, indicator LEDs or external relays. Each output is an open-collector transistor output (pull to

ground) capable of supplying 200 mA, but total current from these outputs together with the switched (S12V) and unswitched auxiliary power (12V) terminals should not exceed 500 mA, and protected by a resettable fuse (F2). If higher current is required, an external supply may be used instead of the 12V terminals.

Connection to Relays

Connect 12V relays to outputs according to the figure below. Relays should be connected between the 12V terminal and the output terminal. They should be located near to the enclosure. The RLY01 has 4 x 12V relays which can be used for this purpose.

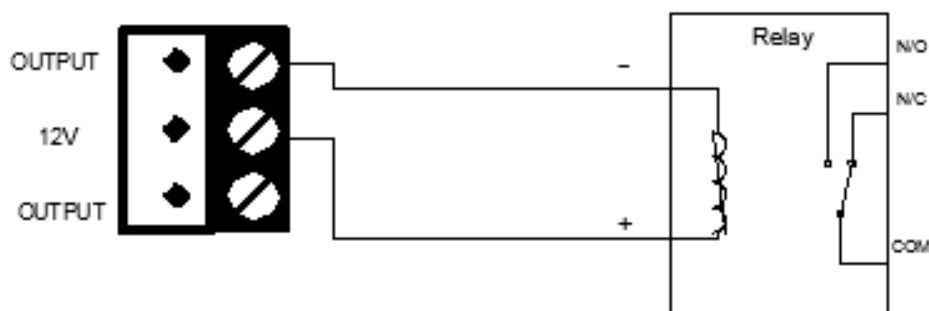


Figure 5 - Output Connection to a Relay

Connection to Infrared LEDs

There are 3 types of IR transmitter modules which can be connected to the outputs; IRM01 for longer distances (up to 8 meters range), IR01W or IR03W for short range transmissions (up to 1 meter range). The manuals for IR transmitters can be downloaded from http://www.cytech.biz/infrared_transmitter_manual.html

12V Auxiliary Supply Outputs (12V and S12V)

12V and GND supply 12V to devices which require power e.g.. motion detectors. The S12V terminal provides 12V to external devices which require resetting when activated, e.g.. smoke detectors.

CM9001 can be programmed to turn off S12V when needed, either when the system is disarmed or when the system is being armed. Latched Smoke detectors and Shock detectors need to be reset when the system is being armed.

Total continuous current from these and the Output 12V terminals should not exceed 1 A. These terminals are current limited by resettable fuses.

Local Expansion Module

LEM02B can be plugged directly into the LEM connector of the CM9001 without needing a ribbon cable.

LEM01 or LEM03 is connected using the 10 way ribbon cable to the LEM connector (J5). Refer to the LEM Installation Manual which can be downloaded from http://www.cytech.biz/expansion_module_manuals.html

Modules on the CM9001 RS485 Bus

Slave Expansion Modules(SEM01)

Slave Expansion Modules allow expansion beyond 16 Inputs and Outputs. Connect Slaves to CP9000 using the supplied 4 way white cable or by CAT5 cable to terminal blocks (12V, COM, KA, KB) for longer distances. Set Each Slave to a unique ID (from 1 to 3) via the ID shunts. Each SEP01 should have their own transformer and battery. Refer to the SEM Manual which can be downloaded from http://www.cytech.biz/expansion_module_manuals.html

Keypad (KP04AE)

Up to 15 keypads can be installed in a system. Connect Keypads to CM9001 using by CAT5 cable to terminal blocks (12V, COM, KA, KB, MIC, Voice) at both ends. Set each keypad to a unique ID (from 1 to 15). Refer to the Keypad Installation Manuals which can be downloaded from http://www.cytech.biz/keypad_manuals.html

UCM (Universal Communications Module)

UCM/USB is a USB Interface for programming with Comfigurator. UCM/ETH03 allows connection to the Ethernet for programming. Other UCMs include interfaces to other systems like Cbus, KNX, Modbus or RS232/RS485 to 3rd party systems. UCM/GSM4 allows alarms to send SMS or to dial to 16 phone numbers. Up to 8 UCMs can be installed. Connect UCMs to CM9001 using the supplied white 4 way cable or by CAT5 cable to terminal blocks (12V, COM, KA, KB) for longer distances. Set Each UCM to a unique ID (from 1 to 8) via the SW7 ID switches. **Mount UCM/GSM4 in the EN01D enclosure by using the standoffs BEFORE mounting the enclosure to the wall as it needs access to the bottom.** The UCM Manuals can be downloaded from http://www.cytech.biz/ucm_manuals.html

MSM01 MultiSensor

The MSM01 Multisensor Module has built-in Humidity and Temperature Sensors as well as 2 external inputs to detect Water Leakage using Water Leakage detection cables. It also has 4 external Inputs for detecting equipment failures. Connect to CM9001 using either the 4 way white cable if the distance is short by via the Green terminal Block (12V/COM/ KA/KB) if the distance is too long for the white 4 way cable. Refer to the MSM01 Manual for more information. Download manual from http://www.cytech.biz/product_details.php?item_id=508

Quick Start Power-On Checklist

- 1 Connect one keypad with ID = 1, which is the default Keypad ID. 12V/COM, KA/KB, Mic/Voice from Keypad to CM9001 Terminal Blocks using Data cable 4 pair twisted cable.
- 2 Mount the LEM02B Local Expansion Module and ETH03 Submodule (if required) on the CM9001 PCB See Figure 2 for mounting position of CM9001.
- 3 Connect the telephone line to TEL IN terminal block. If the telephone line is not available, expect a "Phone Trouble" alarm at the keypad.
- 4 Mount UCM/GSM4 to the Enclosure before mounting the enclosure to the wall. Connect to CM9001 using the white 4 way cable between JP2/JP2A on the UCM to "RS485" connector on CM9001.
- 5 Mount the CM9001 PCB to the EN01 metal enclosure by 8 screws on the standoffs

- 6 If MSM01 is required, Mount the MSM01 on the wall in the room to be monitored. Connect to CM9001 using Data cable 4 pairs (12V/COM/ KA/KB). If MSM01 is near enough, use the 4 way white cable instead. The MSM01 should be ID=1. Other MSM01s should have IDs 2 to 15.
- 7 Connect an electrical mains cable between the power supply terminal blocks and a mains plug.
- 8 Turn on the mains power. The keypad should beep briefly. Observe the ID1 (red) and ID2 (green) LEDs on the PCB during the self-testing cycle. Both LEDs should turn on when power is first applied. After a second, the red ID1 led should turn off, then the green ID2 LED which should blink off and on again.
- 9 The Green ID2 LED on the CM9001 board should be on steady, and may start blinking if there is a phone trouble. The RED ID1 led should be off indicating the system is not armed.
- 10 After a few seconds, the keypad should say "Security Off"
- 11 Enter 1234# on the keypad. The Voice menu should be announced. Press F to exit from the menu. There may be a "Phone Trouble" announcement and beeps if the telephone line is not connected.
- 12 You can now start to connect other keypads and modules and the alarm sensor wiring, taking care to set a unique ID on each Keypad and UCM module.
- 13 Terminate all zone wiring into the respective Zone Terminal Blocks on the Main board or Local Expansion Module (LEM) and label accordingly.
- 14 The system is ready for programming, This can be done by the ETH03 submodule (if installed on CM9001), or by external UCM/USB or UCM/ETH03 via the 4 way cable to the white RS485 4 pin header on CM9001. The **UCM 6 wires multicoloured Programming cable should NOT** be connected. The UCM red (D9) and green (D10) LEDs on the UCM should both be blinking rapidly, showing that there is communication with CM9001.
- 15 To program using Comfigurator software, refer to "Programming with Comfigurator". **Remember to set Date and Time**
- 16 Connect the 12V 7 AH battery to the BATT terminals of CM9001 using the supplied battery cable.
- 17 Refer to the CM9001-EMS Programming Manual for instructions on programming
http://www.cytech.biz/cm9001_environmental_monitoring_system.html

Document Revision History

- 1.0.1 – 3 January 2018
- 1.0.2 – 6 April 2019 – added options for MSM01, UCM/Pi
- 1.0.3 – 6 Sept 2010 – Updated KP04AET

Important Note

The printed manual may not always be the most current version. Please check and download the latest version from <http://www.cytech.biz/manuals.html>



web .

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