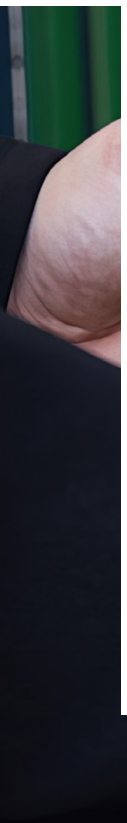
CAME KMS

SIMPLEKEY 4

INSTALLATION GUIDE



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CAME KMS SIMPLEKEY 4
INSTALLATION GUIDE

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WHAT'S NEW IN THIS EDITION?

- Update to new design
- Various updates to PCB drawings
- Updated RJ45 BUS adaptor issue 2
- Lock Controller Mk3
  - Communication ModuleCM-Multi
  - CM-IP
  - Connecting additional System Controllers
  - Diversity Antenna
- BUS Expansion Module
- Guarantee
- Return Merchandise Authorisation (RMA)

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PREFACE

This CAME KMS SimpleKey 4 Installation provides all the information required to install a SimpleKey 4 system.

ABOUT THIS PUBLICATION

This guide lists all the basic aspects of installation, from the system introduction which provides basic information about the SimpleKey 4 system (e.g. specifications) to more detailed installation information on each component. All aspects of this manual assume previous experience in the installation of access control equipment, low voltage and extra low voltage systems.

CUSTOMER SUPPORT

CAME KMS provides support to resolve questions or problems regarding installation, operation, or use of our products. CAME KMS provides all levels of support during normal Business hours (09:00 – 5:00, Monday to Friday).

CAME KMS currently do not provide an out of hours service.

You can contact customer support as below:
Email: ckuk.technical@came.com
Phone: 01494 531099

Note: Installation must be wired in accordance with National Wiring Regulations (BS7671:2018, IEE National Wiring Regulations in the UK). Failure to do so can result in injury or death by electric shock. It must also comply with any local Fire, Health and Safety Regulations.

CAME KMS DOCUMENTATION / PRODUCT ENHANCEMENTS

Submit all product and documentation suggestions to CAME KMS' product management team at ckuk.technical@came.com

Include your name, contact details and the name of the CAME KMS product you are using.

For documentation suggestions, include the publication title and number located on the publication's front cover.

INTRODUCTION

DESCRIPTION

SimpleKey 4 is an extendable residential access control system with each System Controller providing access for up to 10,000 residents through one or more doors (up to 16) using CAME KMS proximity readers.

Note: Other readers (e.g. Wiegand 26-bit) may be used in conjunction with the CAME KMS Reader Interface.

COMPONENTS

A SimpleKey 4 system comprises:

A SimpleKey 4 System Controller.
- A SimpleKey 4 Communications Module (CM).
- Optional BUS readers.
- Optional Reader Interface.
- Optional Lock Controller.
- Optional SimpleKey Event Manager.
- Optional BUS ExpansionI Module.

It is normally supplied boxed with a power supply, pre-programmed tokens, and relevant labelling.

Note: By using the CAME KMS BUS a maximum of 16 doors can be managed per system controller. There is a 700 metre limit for the CAME KMS BUS, which is divided between all system components, no single component to extend beyond 100m. Up to four System Controllers can be linked together to manage up to 64 doors. This will require additional equipment and system setup. Please contact CAME KMS Technical for further details.

HOW IT WORKS

Each CAME KMS shark tooth token contains a unique code. The SimpleKey 4 System Controller can store up to 10,000 tokens in non-volatile memory. When a token is presented to a reader the token code is compared with those stored in the controller memory. If a match is found, then the associated lock is released.

PROGRAMMING

A SimpleKey 4 system comes pre-programmed to meet client requirements. Tokens are assigned to areas providing access to the doors specified by the customer.

To ensure correct programming, the information described in “Information Required for Setting up a New Block / Area to an Existing Customer Cloud” on page 12 is required when the order is placed.

Once the system is up and running it is administered via SimpleKey Web.

SPECIFICATION

The following tables provide product details.

Access Provided

Doors	Controls up to 16 doors per System Controller with up to two readers per door.
Tokens	Up to 10,000

Controller Physical Characteristics

Dimensions (H x W)	210 x 150mm
Weight	268g (with CM-4G)
Mounting	Five (3.2mm) fixing holes

Note: Upgrade controllers are supplied on a variety of backplates to meet site requirements. Please contact CAME KMS at ckuk.info@came.com for more information.

Communications

Mobile and I.P based communications. See 'Modem' section within manual.

Communication interface to additional components (readers etc.)	CAME KMS BUS
Memory type	Non-volatile FLASH
Baud rate	115,200

Operating Parameters

Input voltage range	+12v to 14v DC
Current consumption at +12v DC	Average 160mA, peak 5A, 5A maximum
Lock power	+12v to 14v DC; 2A lock (maximum)
Operating temperature	-10°C to 80°C (14°F to 158°F)
Operating humidity	10% to 85% relative humidity, non-condensing
Lock relay timer 1	1 - 255 seconds (default 5 seconds)
Door open timer	0 – 255 seconds (default 0 seconds (off))

INFORMATION REQUIRED FOR SETTING UP A NEW BLOCK OR AREA TO AN EXISTING CUSTOMER CLOUD

Each customer cloud needs to be set up to reflect what is physically on the ground and to suit how the customer manages their operation.

For example, customers may have:

- Set up separate regions (i.e. North, South, etc.) and each new block/area must be positioned in the correct region within the customer cloud.
- Defined 'Estates' with specific blocks associated with them and each block must be positioned within the correct estate.

It is important that the system is constructed correctly for each customer and matches the 'physical' hierarchy used by the customer. This is particularly important as the system grows to ensure ease of operation for the client.

Existing Customers

For existing clients, the following information is required:

- The name of the client (end user customer cloud).
- Details of the block/area to be added - full name and address including postcode.
- Details of any existing region / area / estate / block / road etc. to which the new block / area is to be added or confirmation that it is a separate block / area not tied to an existing region etc.
- The equipment required (controllers, readers, etc.) including part numbers.
- Token assignments - flat number, parking bays, door names, etc. as required.
- The sequence in which the doors are to be programmed (Door 1 = MED, Door 2 = RED etc.).
- Access details—who is permitted access to where.
- Any Time Profiles required (e.g. specific times for cleaners, etc.).
- Token colours and quantities for programming for each specific area.
- Token colours and quantities for programming to the customer cloud.
- Any other information that may need to be considered.

New Builds

The same information is required for a new build, but they present additional challenges as they tend to be more fluid. When collecting the required information, it should be noted what is confirmed and what may be subject to change. For example, if the block/door names/access/etc. changes then the customer cloud must be updated.

All installations must be commissioned with CAME KMS customer services before they are signed-off and this may be a good time to check details and that the customer cloud accurately reflects the installation. It is important that the integrity of the customer cloud is maintained so that, when the client takes ownership of a new build, the information they see is correct.

Note: Master tokens (access all doors for contractors working on site) for new builds can be set with a reduced time profile, for example, these tokens will expire 6 months after activation. This will provide better access control during and after build completion.

Note: CAME KMS are not responsible for programming Master Tokens by default, these are normally administered by the end user.

Site Survey

It is crucial that a site survey is carried out before any installation to determine:

The 4G signal and where best to locate the controller to ensure the best communications possible - this will include antenna location and cable routing and length. The antenna should be located on an external face of the building and several metres above ground level as this may achieve a better signal strength whilst deterring vandalism. In sub-optimum signal locations, the upgrade to a CM-Multi with diversity antenna may be of benefit.

The information needed to program the system - the number of flats, how they are numbered/named, access areas, etc. (see “Information Required for Setting up a New Block / Area to an Existing Customer Cloud” on page 10).

All aspects of pre-installation including full site survey in relation to cabling, routing and cable distances are the responsibility of the contractor.

SYSTEM COMMISSIONING

Every system MUST be commissioned with CAME KMS once the installation is complete. Systems must NOT be commissioned before they are fully installed on site, CAME KMS reserve the right to nullify all warranties related to system performance unless all steps are followed.

This is the only way of ensuring the system has been connected correctly to match the initial configuration.

System commissioning includes the following tests:

- Signal strength.
- Signal Bit Error Rate.
- Correct communications between the CAME KMS cloud server and site based GPRS modem.
- Events are being received for each door on the system and events are correct for that door.
- Remotely unlock every door on the system to ensure all locks, readers and outputs work as configured. Make system adjustments including lock release time, door open warning times, trades' profiles and any re-labelling of doors.

CM-4G COMMUNICATIONS
CONNECTION & COMMISSIONING

Note: It is the installer's responsibility to ensure good communications are established between the modem and the CAME KMS SimpleKey server.

Antenna

- A high gain antenna **MUST** be installed with every system.
- In most cases the signal will be boosted by installing the antenna outside on the face of the building, Loft spaces are alternative locations as long as foil-backed insulation is not present.
- A signal strength test should be carried out before installation commences to establish the best location for the antenna with regard to signal strength & resistance to vandalism. The Communications module shows the current signal levels via a bank of on board green LED indicators. A minimum of three green LEDs are required to pass commissioning.
- Once the antenna location is determined the most suitable length of antenna must be used to avoid excess coils of cable. These are available in 5,10,15 or 20m lengths. Excess cable will reduce overall signal levels and may cause poor system performance. Antenna cables must not be shortened by cutting and re-joining!

Modem

- To assist with reliable communications, SimpleKey 4 Controllers are, by default, shipped with a non-steered roaming SIM card. The controller will ultimately decide which network to connect to based upon final signal levels. Antenna installation location is crucial.
- Connections below a signal reading of 45%, or 15,0 may be intermittent resulting in the device dropping offline.

Commissioning

- The installer MUST contact CAME KMS from site at the time of commissioning of the system to establish reliable communications between the unit on site and the CAME KMS servers hosting the SimpleKey Software.
- CAME KMS will only mark the system as commissioned once this call has been recorded. Working with the engineer on site we will test and record on SimpleKey web:
  - The name of the engineer and company they work for.
  - The date the system is first connected.
  - The signal strength at time of installation,several tests may be carried out within this period to ensure good communications.
  - All doors operate correctly in regards to events, lock output switching, door naming, lock release time and inputs, for example, RTE, breakglass or a trades button.

Maintenance

- The installer/maintenance provider may be required to re-visit the installation should the modem need resetting due to a network connection issue.

QUICK START

If you have installed a SimpleKey 4 system previously the following procedure provides a quick, high-level description of the steps needed to get the system up and running.

Note: If this is the first time you have installed a SimpleKey 4 system the steps are described in detail in the subsequent pages.

To set up a SimpleKey 4 system:

1. Install the SimpleKey 4 controller (complete with power supply).
2. Install readers, cabling and Request to Exit switches
3. Install the antenna.
4. Install the locks and cabling.
5. Connect any auxiliary inputs.
6. Commission the system with CAME KMS.

Note: It is essential that each component is installed and connected in line with the system configuration agreed with CAME KMS.

Each system is supplied with a full configuration document, connection labels and QR codes providing information as to which door it is to be connected.

Commissioning the system must involve calling CAME KMS and a walk-through to ensure that all aspects of the system are working as expected.

Failure to fully commission a system may result in incorrect operation and reduced functionality. CAME KMS are unable to support any system that has not been commissioned.

INSTALLATION

This section describes how to install the SimpleKey 4 system. Installation is only to be carried out by competent, qualified and experienced personnel trained by CAME KMS.

Wire in accordance with the country of installation's National Wiring Regulations (UK BS7671, IEE National Wiring Regulations). Failure to do so can result in injury or death by electric shock.

THE SIMPLEKEY 4 SYSTEM

The SimpleKey 4 system comprises:

- System Controller
- Communications Module
- CAME KMS BUS
- Lock Controller
- Reader Interface
- BUS readers
- Locks
- SEM

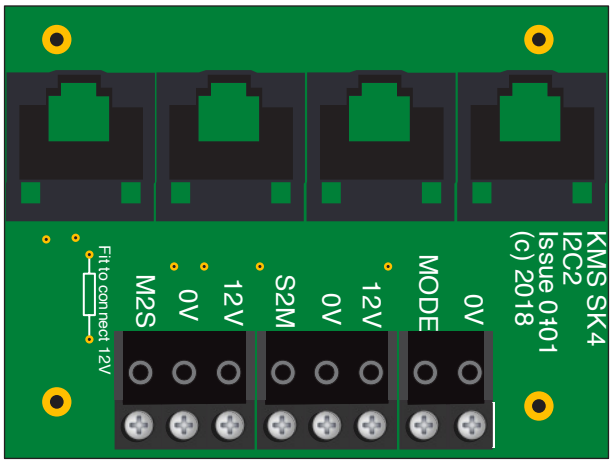
SYSTEM INTERCONNECTS

To aid simple installation CAME KMS have produced several methods to connect system components together. These are all based around the common RJ45 connector allowing installers to either connect via a traditional screw terminal connector or terminate using RJ45 plugs.

I2C2

This board is simply four RJ45 sockets and an 8-way screw connector. Uses include but not limited to:

- BUS connections between System controller and components.
- One or two door DIN rail expansions.
- Connecting outgoing BUS communications (omit RJ45 Pins 3 & 6) .



CAME KMS use pre-manufactured Ethernet patch leads, these are for connections within the cabinet only. If making your own leads the PIN outs below must be adhered to. Only connections 1-5 are utilised.

RJ45 Pin	CAME KMS BUS connection
1	M2S
2	0v
3	Omit
4	S2M
5	0v

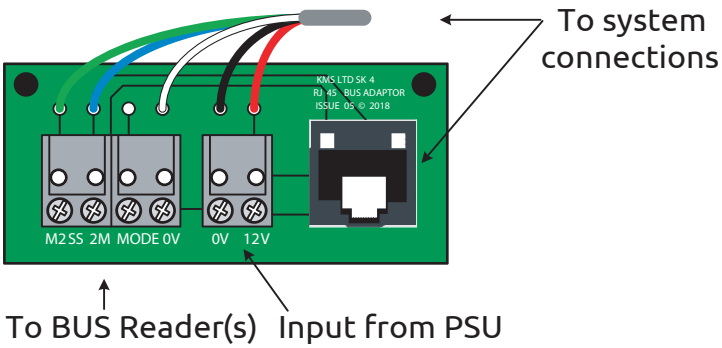
Note: If I2C2 is to be used for outgoing BUS comms omit RJ45 pins 3 & 6. This is to ensure the + is not connected to another source!

RJ45 ADAPTOR ISSUE 1

A single RJ45 socket with screw connectors. CAME KMS included these with the one and two door DIN rail systems. Each board has fly leads connecting Lock Controllers and Reader Interfaces together, the RJ45 is then used to connect to the system controller or I2C2.

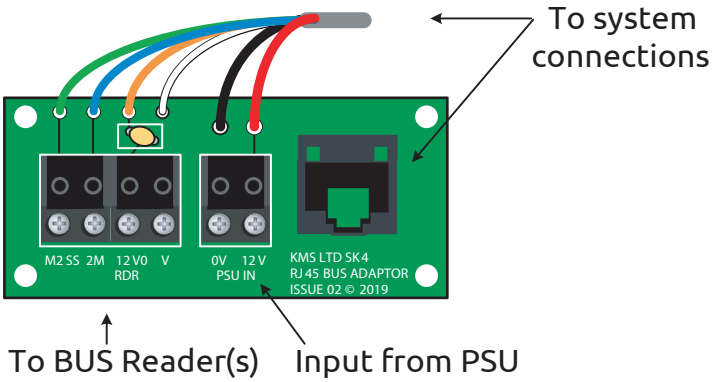
Where one or more Lock Controllers are connected using the RJ45 adaptor, power must be provided directly from the PSU using BUS terminals 6 & 8 on the Lock Controller.

An ethernetEthernet patch cable is **not** able to supply adequate current for locks and this should be taken into consideration by the installer.



RJ45 ADAPTOR ISSUE 2

An updated adaptor incorporating a fuse for the BUS reader output.



Note: Do not use crossover patch cables! These will short the BUS communications to 0v

SYSTEM CONTROLLER

The controller is supplied on a backplate for inclusion in a metal cabinet either supplied by us, an OEM or for mounting in an existing cabinet on site. When supplied, the CAME KMS cabinet contains an integrated power supply, typically a 75watt 15V supply is provided and trimmed down to 13.5V at the factory. It should be installed somewhere that is easily accessible.

The metal cabinet CAME KMS provide has a gland situated at the bottom - this must be fitted at the bottom to avoid ingress of water or debris. The gland provides an easy location to run conduit. Two keys are provided with each cabinet.

The controller comes pre-programmed as per customer specification (doors, tokens etc.) and should work 'out of the box' once installed. If additional programming/configuration is required, please contact CAME KMS Technical Support.

Changes to the original configuration should be made by email and may take up to 72hrs to complete.

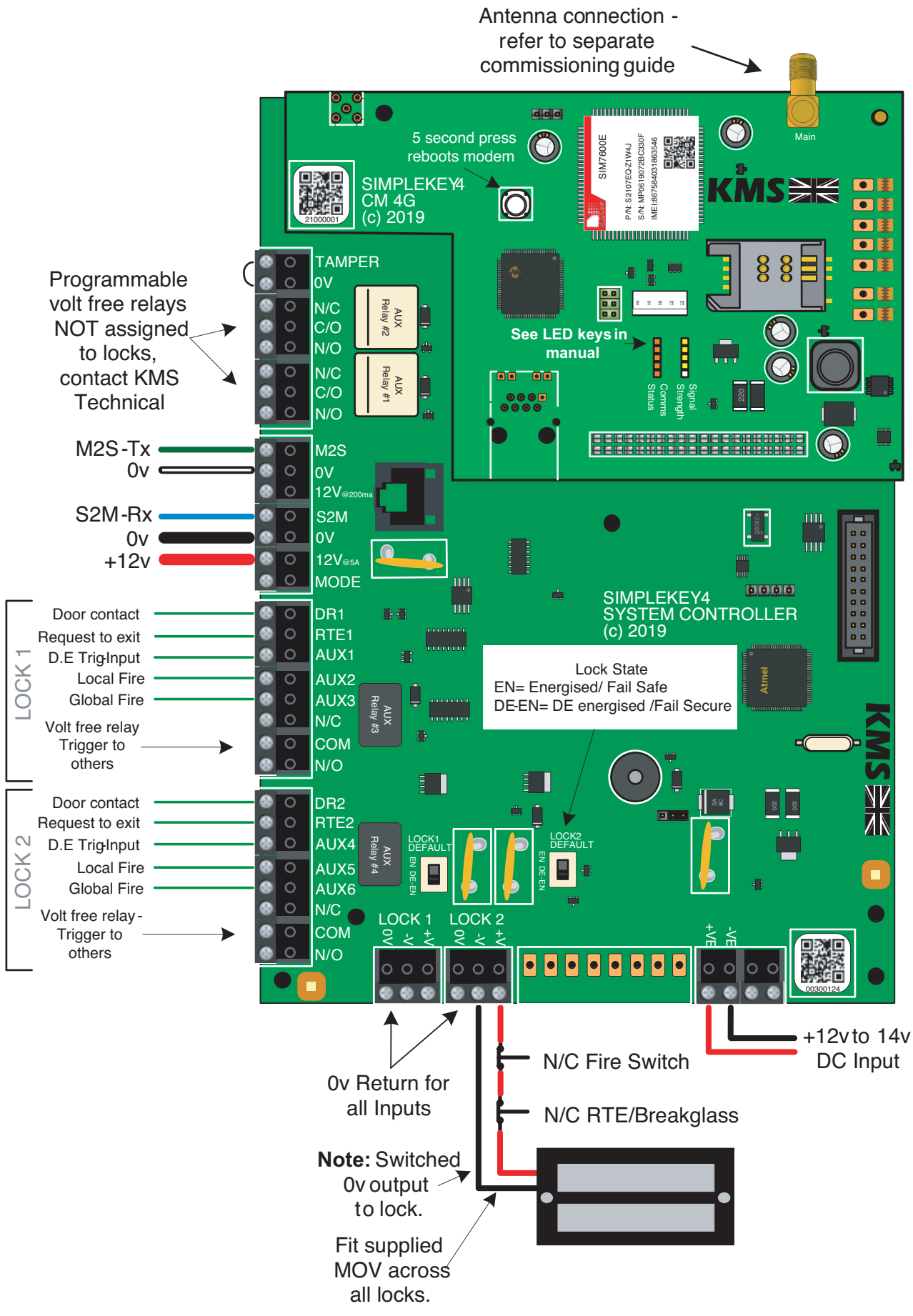
When installed the System Controller, on start-up, polls all nodes in the system. Each node gives a single beep on successful poll (subject to system version).

MK3 SYSTEM CONTROLLER UPDATES

Continued development of the SimpleKey 4 system has led to a number of improvements in connectivity and ease of installation, the most obvious being a redesign in communications. Updates to the System Controller hardware are listed below:

- Updated system processor.
- Solid state relays replaced with SPDT volt free relays, maximum 2A rating.
- Simplifications to connectors for ease of wiring.
- New input trigger 'Door Entry' to allow for clearer local integration with 3rd party systems and end user administration via SimpleKey web.
- Lock default jumpers replaced with micro-switches.
- Works fully with all existing SimpleKey 4 Lock Controllers, Reader Interfaces, BUS readers, SEMs and Front Panels.
- CAME KMS BUS improvements – extended range to 700 metres when using Cat5 cabling meeting or exceeding CAME KMS set specification. Belden 1583E recommended.
- Utilises the same footprint and fixing layout, easily swapped out for any existing SK4 System Controller.

SYSTEM CONTROLLER OVERVIEW



CONNECTIONS

All connections to the SimpleKey 4 controller are made by terminal blocks situated at the left and bottom of the controller.

Note: Always remove power from the controller before removing a terminal block.

These are the available connections (from top left, anti-clockwise):

Box Tamper

Box Tamp	Box tamper switch terminal 1.
0V	Box tamper switch terminal 2. This is normally provided with a metal link loop.

Auxiliary relays 1 & 2

Programmable relays designed for auxiliary use, example being door open contact outputs. 5 Amp capacity.

Aux Relay 2	Normally Closed, Common, Normally Open.
Aux Relay 1	Normally Closed, Common, Normally Open.

Note: Relay contact state true when controller is powered i.e. relay will switch state when system power is removed.

Communication BUS

M2S	Communication BUS — Master to Slave.
0V	Low current 0v connection up to 200ma output current return.
12V @ 200mA	Low current 12v DC at up to 200ma output current (BUS reader only).
S2M	Communication BUS — Slave to Master.
0V return	High current 0v connection up to 5A output current.
12V @ 5A	High current 12v DC at up to 5A output current.
BUS mode	Communication BUS mode selection input (system reserved).

Lock 1 and Lock 2

Note: Inputs normally open, can be inverted to normally closed

Door	Input: Door contact switch to 0v - N/C when the door is closed.
RTE	Input: Request to Exit switch to 0v.
Aux 1	Input: Trigger from Door Entry system. Generates unique event on the website.
Aux 2	Input: Switch to 0v (Local Fire (specific door)).
Aux 3	Input: Switch to 0v (Global Fire (all doors)).
N/C	Output: Relay Normally Closed (Auxiliary Relay 3 & 4).
COM	Output: Relay Common (Auxiliary Relay 3 & 4).
N/O	Output: Relay Normally Open (Auxiliary Relay 3 & 4).

Note: Aux 3 & 4 relays follow lock 1 and lock 2 outputs automatically

Lock 1 and Lock 2 (Outputs) Maximum 2A supply.

0V	Spare 0v connection — use as return for inputs.
-V	Switched 0v from the lock — energises the lock when switched on.
+V	Constant 12v supply. A load of 50mA or greater is required for a multi-meter to read this accurately.

PSU

+VE	+12v DC from power supply module (up to 5A).
-VE	0v (floating relative to earth).

Battery

+VE	+12v, 7Ah lead acid battery (e.g. Yuasa NP7-12FR).
-VE	0v.

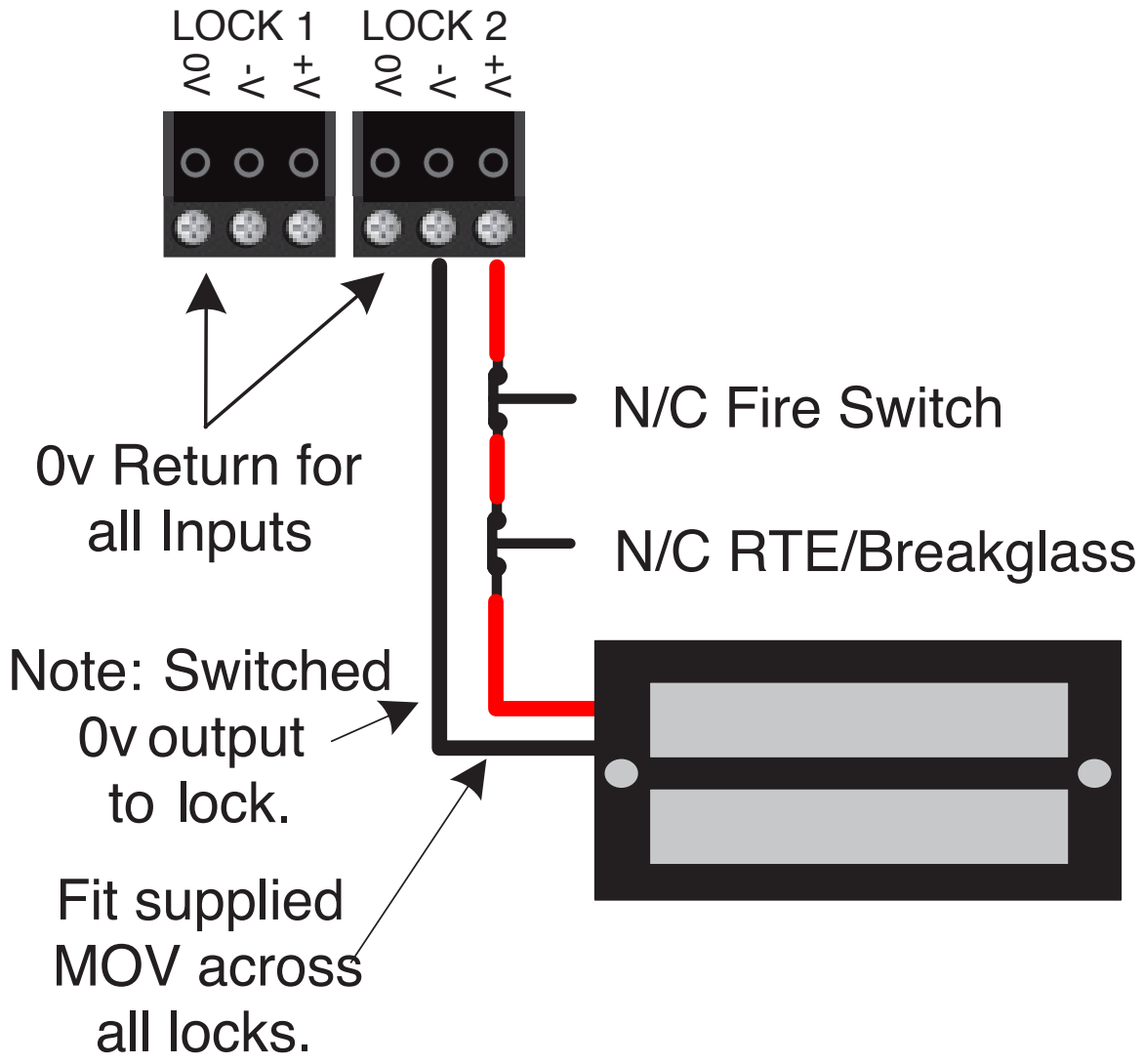
Note: The SimpleKey 4 System Controller does not provide a battery charging facility, this terminal is for the connection of a battery only. If battery backup is required a suitable alternative for charging of the battery is required, contact CAME KMS Technical Support for further information.

LOCK OUTPUTS

The System Controller provides two powered lock outputs set via micro-switch. Each can supply up to 2Amps.The 'Lock Default' mode is set to energised (EN) by default. This is suitable for 'Power to Lock' devices, i.e. magnets or Fail-Safe latches. Lock modes are as follows:

Lock Default Switch Position	Behaviour
EN (Energised)	Power cut on trigger, power to lock
DE-EN (De-energised)	Power supplied on trigger, power to unlock

The wiring example below shows the lock's +12v output being broken through the N/C RTE and emergency break glass.



INPUT CONNECTIONS

Health and Safety

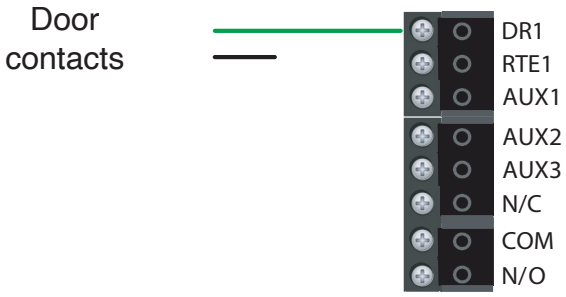
Any installation must comply with any local Fire or Health and Safety regulations. Any secured door that may be part of an escape route should be fitted with:

- A Fail-Safe lock to ensure that the door is released if the power fails. CAME KMS recommend that a magnetic lock is used as these are less likely to jam or seize.
- A normally closed Break-Glass or manual break in the lock supply wiring to ensure that the Fail-Safe lock can be immediately de-powered.

Note: All inputs are 0v triggered, i.e. wire between RTE and 0v to trigger system. Do not use building ground!

Door Contacts

Door contact inputs are switched off by default. These can be switched on by CAME KMS with the appropriate open warning time set. This input is set as normally closed meaning that when the door is closed the contact between DR1/2 and 0v must be closed circuit. This can be inverted to suit installation.



Request to Exit

Request to Exit input from exit/egress button. Default lock release time of 5 seconds.

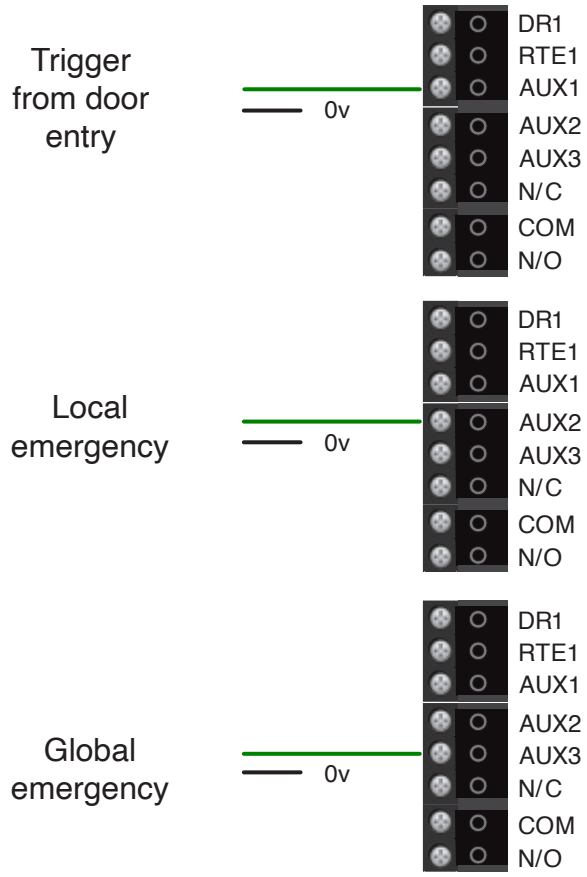
Auxiliary Inputs

Three auxiliary inputs are provided per lock output, these functions are pre-determined by CAME KMS. All inputs are normally supplied open going closed to the terminal marked GND, unless otherwise requested. Aux 1 trades has been replaced; any input can be set as trades by CAME KMS.

All inputs sit high at 3.3V and are pulled down to GND by a pull up resistor.

As the default, the auxiliary inputs are set as:

- Aux 1 is used as trigger from a door entry system to give a timed release, this generates a unique event allowing end users to better view on site activity. The release time matches the RTE and token timer.
- Aux 2 is used as a Llocal emergency,Fire for example a monitor break glass switch. When triggered this will release the triggered door ONLY. The door will continue to stay unlocked whilst the contact is at GND and an event may be generated on SimplekeySimpleKey Web.
- Aux 3 is used as a Global Fire input, for example this can be connected across a normally open volt free relay output of a fire alarm panel. When triggered this will release ALL doors on the system (1-16). The door(s) will continue to stay unlocked whilst the contact is at GND and an event will be generated on SimplekeySimpleKey Web.



CABLE REQUIREMENTS

Cabling requirements are based on a typical installation where all cable runs terminate at the System Controller cabinet. It is extremely important to use high quality cables throughout the installation to ensure consistent and reliable functionality. CAME KMS BUS data cabling must be Cat5, Cat5e or Cat6 with either solid or stranded copper conductors. Cheaper Cat5 cabling using conductors made from Copper Coated Aluminium (CCA) and Copper Coated Steel (CCS) must NOT be used under any circumstances. Incorrect cabling will result in degraded system performance and void all warranties.

It is the installer's responsibility to comply with BS7671 IEE National Wiring Regulations in the UK. Band 1 and Band 2 compliance should be adhered to. Low voltage cabling should be separated from high voltage cabling to reduce the possibility of noise and crosstalk on data transmission lines.

System components must have the appropriate cable type and size calculated by the installer, including but not limited to locks, readers and loads being switched by relays. This should take into consideration the cable length and current consumption of the power sink at the end, i.e. magnet type locks may draw 500ma each so 1 Amp should be allowed for - using a Cat5 cable would be inappropriate whereas a 1mm copper flex is ideal.

Stranded cable is preferable to avoid strain placed on connectors.

MAXIMUM CABLE RUNS

Total CAME KMS BUS 700 metres, includes BUS reader run.

Reader Interface Mk1 1(designated by UDN 0500) to reader 50 metres.

Reader Interface Mk2 (designated by UDN 0520) to reader 100 metres.

CAME KMS BUS	Cat5, Cat5e or Cat6 network cable of known brand and specification. <150ohm per 1000 metres minimum. Due to the large variety of twisted pair data transmission cables manufactured, CAME KMS are unable to recommend or endorse any specific brand but one example could be Belden 1583e Cat5.
Reader Interface to Reader	6 or 8 core Alarm multi-stranded cable, CW1308 (copper core)
Lock Controller to Lock	Twin 1mm² copper flex assuming locks up to 1 Amp, installer to calculate for larger loads / longer runs.
RTE to Lock Controller	Alarm cable, CW1308, Cat5
Other General INPUTS	Alarm cable, CW1308, Cat5
High Gain GPRS Antenna	CAME KMS provide Antennas in 5, 10, 15 and 20 metre lengths, all of which must not be cut and re-terminated due to tuning of antenna. Further information later in this guide.

CAME KMS BUS

The CAME KMS BUS carries all communications between system elements — System Controllers, Reader Interfaces and Lock Controllers. From here on in, this manual will refer to these as NODES.

The System Controller is designed to power equipment that is connected within the cabinet locally and is not designed to power remote components. However, the System Controller can power Reader Interfaces and Lock Controllers if connections do not exceed fifteen metres. Beyond this Distance the NODES need to be powered locally with just the data connections wired between cabinets. CAME KMS have designed the BUS to be 'free topography' meaning the data BUS can be run in either a daisy chain or star wired configuration.

Open ended BUS runs, where one end of a cable is connected to the BUS data and the other end is not terminated or left open must never be introduced. 'Loop' or 'ring' topography should be avoided where possible.

Note: For added system integrity CAME KMS highly recommend a star wire configuration. It is the installer's responsibility to ensure secure and proper BUS communication cable runs. Ideally these should be within the fabric of the building and in separate containment.

In cabinet wiring supplied by CAME KMS: (Other OEM supplied builds should be wired using the same cable colour identification and specification.)

M2S	1	1 core - Green 0.2mm^2
0V	2	1 core - White 0.2mm^2
12V	3	Not used
S2M	4	1 core - Blue 0.2mm^2
0V	5	1 core - Black 0.5mm^2
12V	6	1 core - Red 0.5mm^2

BETWEEN CABINET WIRING

The wiring guide below should be used where separate cabinets require the BUS DATA wired. The same applies regardless of the number of cabinets. The use of a 12v DC power supply is required in each separate cabinet to power all the local NODES.

M2S	1	1 core Green 0.2mm^2 - Wire to Green/White of Cat5
0V	2	1 core White 0.2mm^2 -- Wire to White/Green and White/Blue of Cat5
12V	3	Not used
S2M	4	1 core – Blue 0.2mm^2 - Wire to Blue/White of Cat5
0V	5	Not used
12V	6	Not used

Note: All spare cores on BUS cabling should be terminated to ground.

Wiring diagrams for transmitting the BUS between cabinets can be found on pages 44 and 45.

Note: If there is a short on the BUS (M2S/S2M goes to ground) then alarms are generated on all NODES - General Alarm for 60 seconds followed by a Reminder Alarm (1 tone) every 5 seconds. Data loss to Lock Controllers will result in automatic lock release (non-SBD), the Lock Controller will flip the lock state i.e. Fail-Safe becomes Fail-Secure, Fail-Secure becomes Fail-Safe. All egress buttons MUST be wired to break lock supply.

LOSS OF BUS COMMUNICATIONS

The Lock Controller can operate in two ways if communications are lost over the BUS, Fail-Safe or Fail-Secure.

Both operations assume local 12V power remains.

CAME KMS will default the Lock Controller to operate as Fail-Safe unless otherwise requested. Requests must be made in writing by the approved installation contractor.

To comply with Secure By Design requirements (SBD) ALL doors must Fail-Secure. Egress must always be provided by means of mechanical intervention, i.e. break glass, RTE or auxiliary over-ride switch, typically the 12v side of the lock is broken via the normally closed circuit.

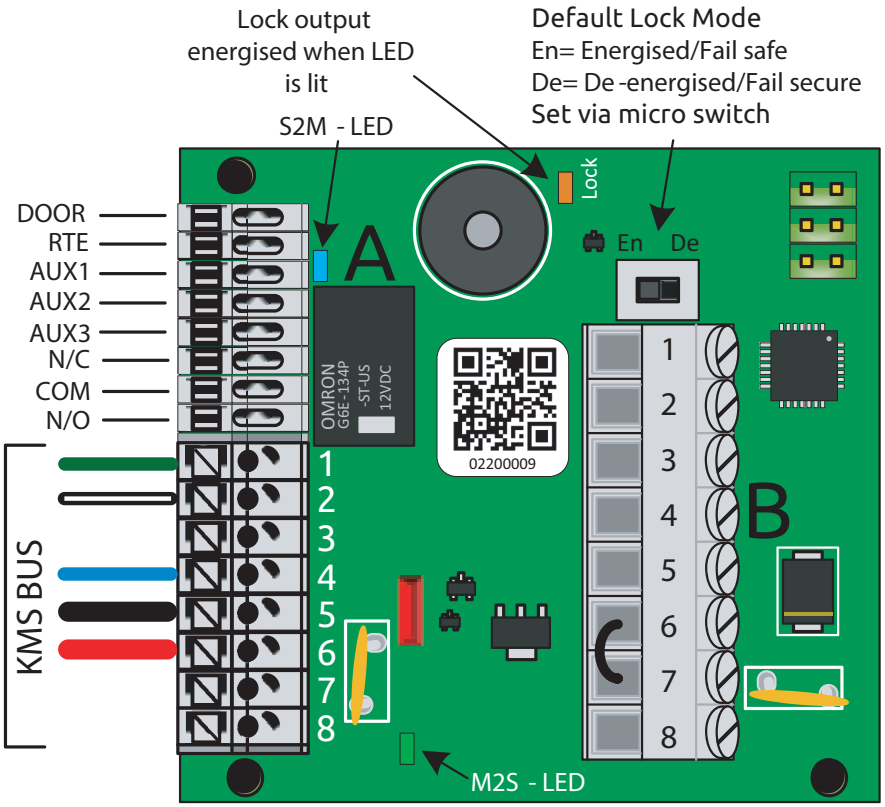
The access control system must NOT be the only means of egress.

Fail-Safe - the Lock Controller will reverse its default lock state, typically dropping the lock output and releasing the door.

Fail-Secure - the Lock Controller will retain its default lock state. For example, power to lock devices such as magnets will remain locked.

Note: It is the installers' responsibility to instruct CAME KMS on default lock operation as above.

LOCK CONTROLLER
MK2 LOCK CONTROLLER



Note: Due to space considerations on the PCB, terminations are labelled 1 through to 8.

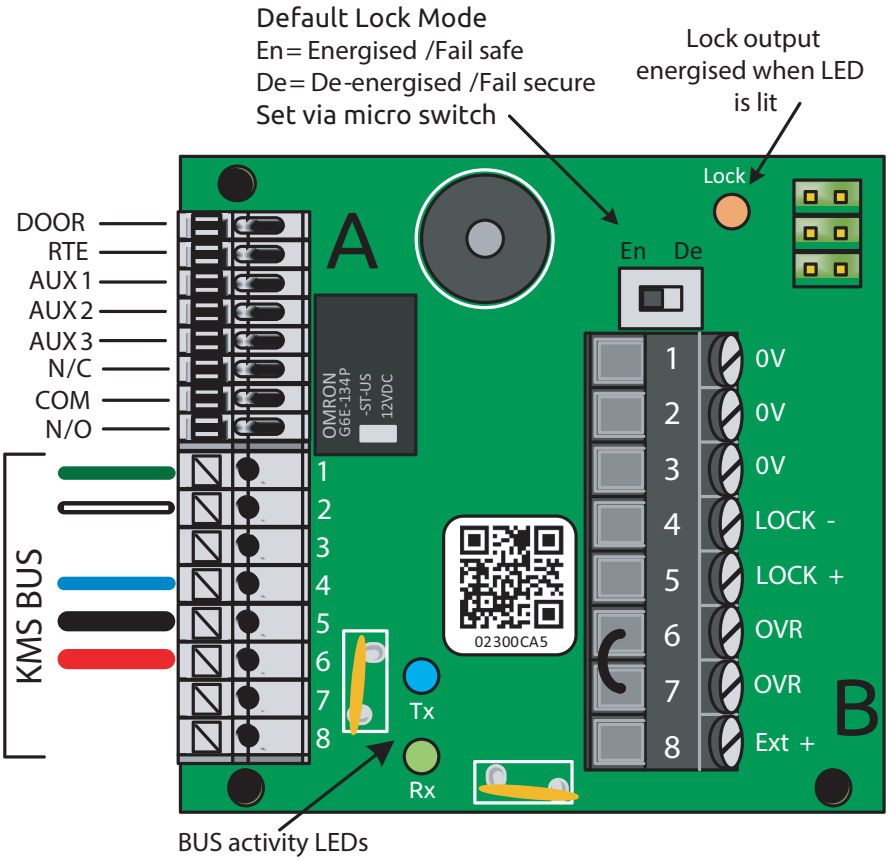
Lock Controllers are designed to control a single door only. Two outputs are provided by means of a powered output to supply up to 2 Amps @12v DC to a lock directly and a volt free SPDT (Single Pole Double Throw) relay to interface with other equipment. This has a maximum current rating of 2 Amps @12v DC. The relay has been designed to follow the powered output and cannot be programmed independently.

The Lock Controller features the same auxiliary inputs as the System Controller, these are listed on the following page.

The Lock Controller features BUS Communication LEDs. These are to be used as a guide to the M2S and S2M signals.

Note: Earlier versions of the Lock Controller have alternative wiring configurations, contact CAME KMS Technical Support for more information.

MK3 LOCK CONTROLLER



The Mk3 Lock Controller brings some updates and improvements over the Mk2 design. These are:

- Clearer BUS indicator LED indicators.
- Lock output termination labelling.
- Improved BUS communications.

All connections and remain the same as the Mk2 Lock controller.

LOCK CONTROLLER INPUT CONNECTIONS

1	DOOR: Door monitoring contact (can be assigned as N/C or N/O).
2	RTE: Request to Exit (default set to 5 seconds). *
3	Aux 1: Input - switch to 0v – Door Entry, open trigger from volt free relay of door entry system (can be re-configured for trades. See Technical Support). **
4	Aux 2: Input - switch to 0v – Local Fire, local door only releases. **
5	Aux 3: Input - switch to 0v – Global Fire, all doors released system wide. **
6	N/C: Normally closed relay contacts 2 Amp Maximum.
7	COM: Relay Common 2 Amp Maximum.
8	N/O: Normally open relay contacts 2 Amp Maximum.

The auxiliary inputs above have been assigned their default function. However, functions can be configured differently from the above. These are the defaults programmed by CAME KMS for all systems unless otherwise stated.

Inputs marked * require a momentary trigger to give an output. This means the system will not allow another input trigger until the last is removed. For example, if the RTE goes closed this contact must open again before another RTE input can be triggered.

Inputs marked ** can either be triggered momentarily or function with a held-on input. For example, if AUX3 is held closed to 0v then the function continues to be triggered, in this case all doors would remain open until the trigger is removed.

Test procedure

Set multi-meter to DC volts, measure between a 0v and an input - around 3.3v should be shown. If NO voltage is read, suspect SHORT across input. i.e. RTE wired normally closed.

LOCK CONTROLLER OUTPUT CONNECTIONS

1	0v: Connect to PSU 0v - ONLY CONNECT IF SYSTEM NOT OEM PRE-WIRED.
2	0v: Used for input triggers.
3	0v: Used for input triggers.
4	0v to Lock: Switched 0v from the lock – energises the lock when switched on.
5	12v to lock: Constant.
6	From OVR: +12v from Emergency lock over-ride switch (usually fitted with metal loop).
7	To OVR: +12v to Emergency lock over-ride switch.
8	+12v: Local power supply input 12v - ONLY CONNECT IF SYSTEM NOT OEM PRE-WIRED

Note: Thermal fuse (across 7/8) provides protection for the board.

The powered output features transistor-based switching of lock power. If testing using a multi-meter a minimum current sink of 50ma is required to correctly read a voltage drop when the output is triggered.

Test procedure

Have suitable load wired across terminals 4 & 5. Ensure lock mode switch is set to EN and orange LED is lit. LED will go out if mode switch set to DE-EN. Set multi-meter to DC volts, measure across terminals 4 & 5, if NO voltage is read check terminals 6 & 7 for metal loop, tighten if required.

If Lock is connected and powered but does not drop when triggered, i.e. orange LED goes out and tone is heard, check for shorts from Lock to 0v/ground. Remember Lock Controller switches 0v NOT 12v!

Common issues with lock not de-energising are due to Local lock picking up 0v from door frame/conduit etc.

LOCK OUTPUT

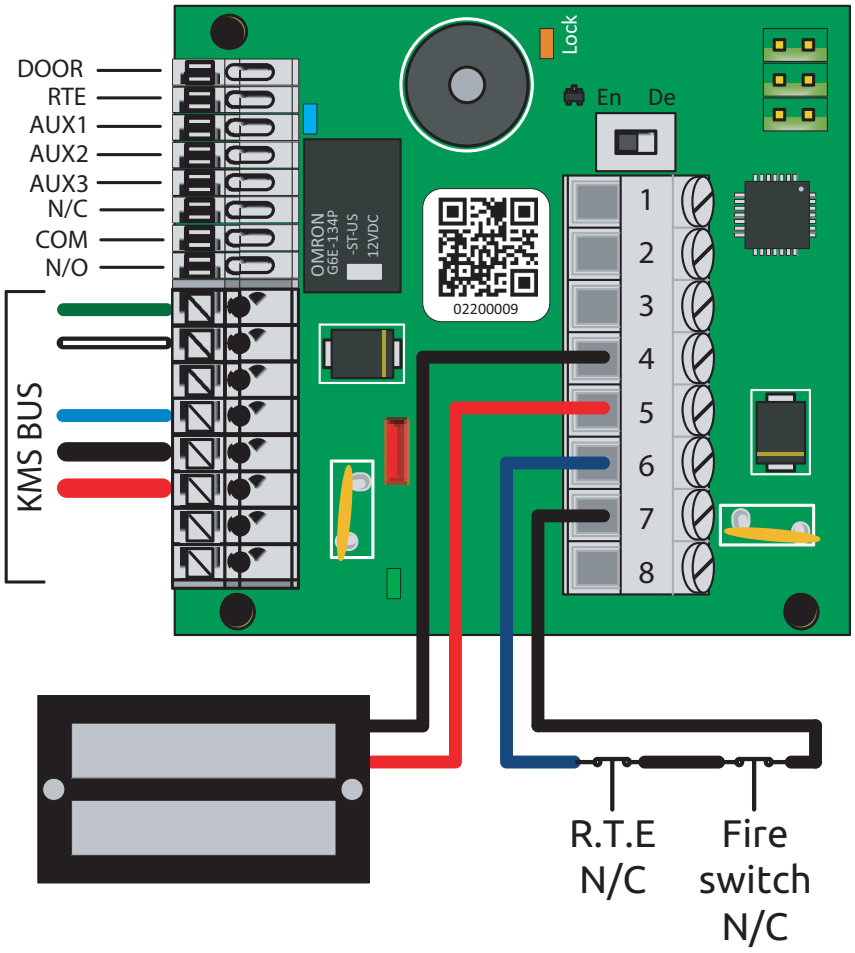
It is critical that all locks are wired intrinsically safe. This means that the access control system should never be the sole means of releasing the doors.

An emergency over-ride switch can be fitted that disables the power to the lock regardless of the access control system. The wiring for an emergency over-ride switch depends on the type of lock being used:

- A Power-to-lock type requires a push-to-break switch between FROM OVR and TO OVR. Alternatively, the +12v wire can be wired through the RTE and fire switch N/C.
- A Power-to-unlock type requires a push-to-break switch between 0v to 0v to lock, and the metal link between FROM OVR and TO OVR. This depends on having power to the system in order to open the door during an emergency.

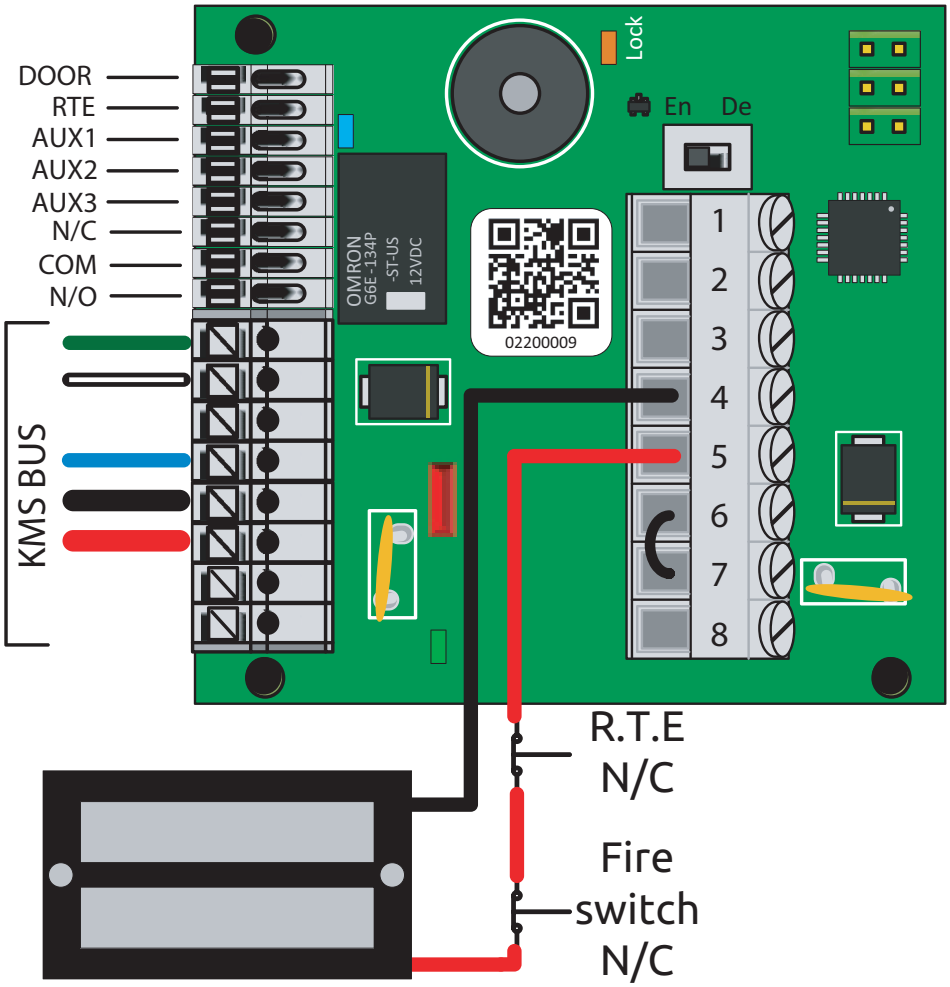
Note: The switch must be rated for the current that the lock takes (i.e. a lock taking 2A requires the switch to also have a 2A rating).

The wiring example below show the lock's +12v output being broken through the OVR connections on terminals 6 & 7 (see previous page)



LOCK OUTPUT CONTINUED

The wiring example below show the lock's +12v output being wired directly through a normally closed contact of the Request to Exit button and Fire Switch/emergency break glass.



COMMUNICATIONS BUS INPUT

1	M2S: Communication BUS — Master to Slave.
2	0v: Tied to System Controller 0v.
3	12v: Common connection with 6.
4	S2M: Communication BUS — Slave to Master.
5	0v: Common to connection 8.
6	12v: Common connection with 3.
7	BUS mode: Not used.
8	0v: Common connection with 5.

Note: The two 0v connections are common as are the two +12v connections.

READER INTERFACE

The Reader Interface provides an interface between non-BUS CAME KMS standard readers and other types (e.g. Wiegand) so that they can be integrated with a SimpleKey 4 system.

The Reader Interface has two channels for connecting a single reader. Typically, one reader per door, if read-in and read-out is required then a single Reader Interface is used per door.

A Reader Interface can control *up to* two readers. Readers can be configured to both read in, i.e. one high mounted and one low mounted on entry or used to read IN and OUT to a door. This allows users of the website to accurately monitor activity as each event is labelled as 'Entry' or 'Exit'

Alternatively, a Reader Interface can be used to control two readers split between two doors, the outputs for these doors do not have to be in the same cabinet.

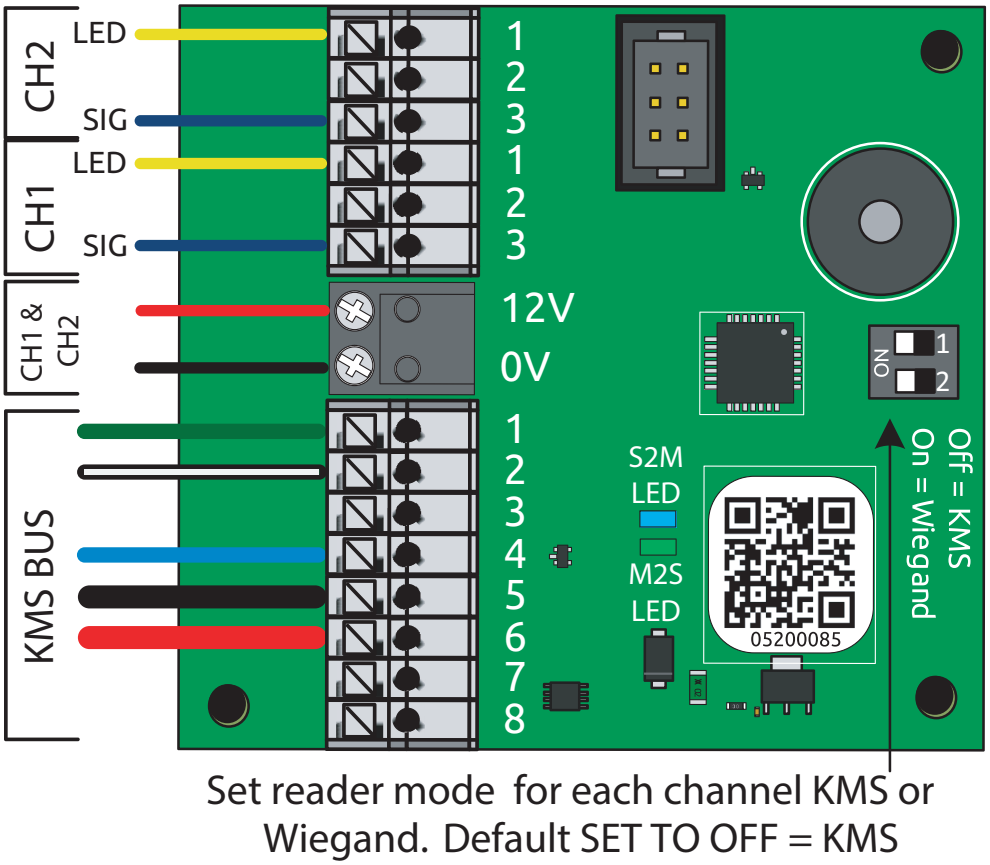
The reader +12v outputs are fuse protected using on board thermal fuses (PTC). Should a reader draw excess current, or its wiring be shorted out the fuse will trip until the excess or short is removed.

Reader input between CAME KMS and Wiegand is switchable via on board DIP switches.

Function	DIP Switch 1 & 2 position
CAME KMS (PAC reader compatible)	OFF
26-bit Wiegand	ON

Note: Reader channels are independent from the other so Wiegand and CAME KMS readers can be mixed across a Reader Interface.

READER INTERFACE OVERVIEW



Note: Due to space considerations on the PCB, reader terminations are labelled 1 through to 3 for each channel.

Reader Connections A and B

1. LED/Speaker
2. Wiegand Data 0
3. SIG/Weigand Data 1

12v. Shared output for Ch1 & Ch2

0v. Shared output for Ch1 & Ch2

Note: Only one reader can be wired into each channel, where a read IN and read OUT configuration is required, a separate Reader Interface will be required per door. Refer to Technical Support for further information.

READER CONNECTIONS CH1 & CH2

1	LED – Controls reader LED i.e. goes green if token is valid.
2	Data 0 Wiegand 26 bit - If Wiegand SET DIP switch to ON.
3	SIG/ Wiegand 26 bit – If Wiegand SET DIP switch to ON.
12V	Fused output for Ch1 & Ch2 readers.
0V	Output for Ch1 & Ch2 readers.

Reader Ch1 Default for Lock 1 - Reader Ch2 Default for Lock 2

COMMUNICATIONS BUS INPUT

1	M2S: Communication BUS — Master to Slave.
2	0v: Tied to System Controller 0v.
3	12v: Common connection with 6.
4	S2M: Communication BUS — Slave to Master.
5	0v: Common to connection 8.
6	12v: Common connection with 3.
7	BUS mode: Not used.
8	0v: Common connection with 5.

BUS READERS

COMPATIBILITY

BUS readers are only compatible with SimpleKey 4 Controllers at version 3401 or higher.

BUS readers can work using CAME KMS Sharktooth, Entrotag, PAC, Stanley and GDX proximity tokens and cards.

CABLING

BUS readers MUST be wired using Cat5, Cat5e or Cat6 cable for optimum operation. Cable should be pure copper, the use of CCS/CCA will degrade system performance. The maximum cable run will vary on installation but 100m is nominal. Up to two BUS readers can be connected to one Cat5e cable but please contact CAME KMS Technical with specification of cable before installation.

INSTALLATION

There are two types of BUS reader:

The Panel Mount BUS Reader is designed to fit within metal panels no thicker than 2.0 mm with a 40mm square cut-out for the front of the reader to protrude through.

Stainless steel Vandal BUS Reader designed for surface mount on non-metallic surfaces. Mounting on metallic surfaces may decrease reading range.

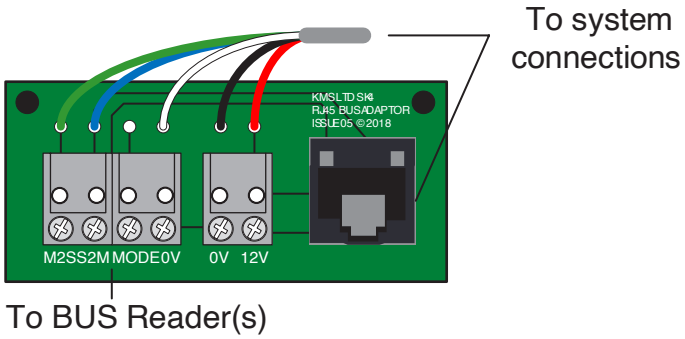
BUS readers come with a 0.5m flying lead Cat5 cable.

See wiring instructions on the following page.

Note: *BUS Readers are uniquely addressed using the 8-digit UDN, for example 04000009. The reader will need to be assigned to a door by CAME KMS, up to two readers can be assigned to any one door.*

CONNECTION

CAME KMS provide a dedicated connector to wire all BUS readers into the system. This is known as an RJ45 BUS Adaptor.



BUS READER WIRING

Orange	12v (up to 100mA max).
White/Orange	0v current return.
Green	M2S - Communication BUS - Master to Slave.
Blue	S2M - Communication BUS - Slave to Master.
Brown	Mode – Wire to Orange 12v.
Blue / White	External speaker negative (Typical 50mA, maximum 100mA) remove if not used.

Note: *Due to changes in the design, earlier BUS Readers with a UDN lower than 04000161 have an alternative wiring configuration. Each reader has its wiring version attached when shipped. Please contact CAME KMS Technical for more information.*

LOCKS

Locks are powered directly via either the System Controller or Lock Controller. Each output can supply up to 2 Amps DC dependant on power supply specification.

All locks MUST be suitably suppressed using either a Metal Oxide Varistor (as supplied) or 1N4000 series diode, all suppressants to be fitted at lock. Back E.M.F. from locks can produce high return voltages capable of destroying system components.

Lack of proper lock suppression may result in long term damage to system components. Damage due to back E.M.F. is NOT covered under guarantee.

Refer to the lock manufacturer's documentation for information on individual locks.

All Fail-Safe or 'power to lock' locking devices must always be wired through a mechanical egress device, these being Request to Exit buttons (RTE) and often emergency break glasses.

CAME KMS would recommend the lock +12v connection is wired through the RTE normally closed contacts, this will ensure the +12v connection is broken on exit as well as the system de-energising the 0v.

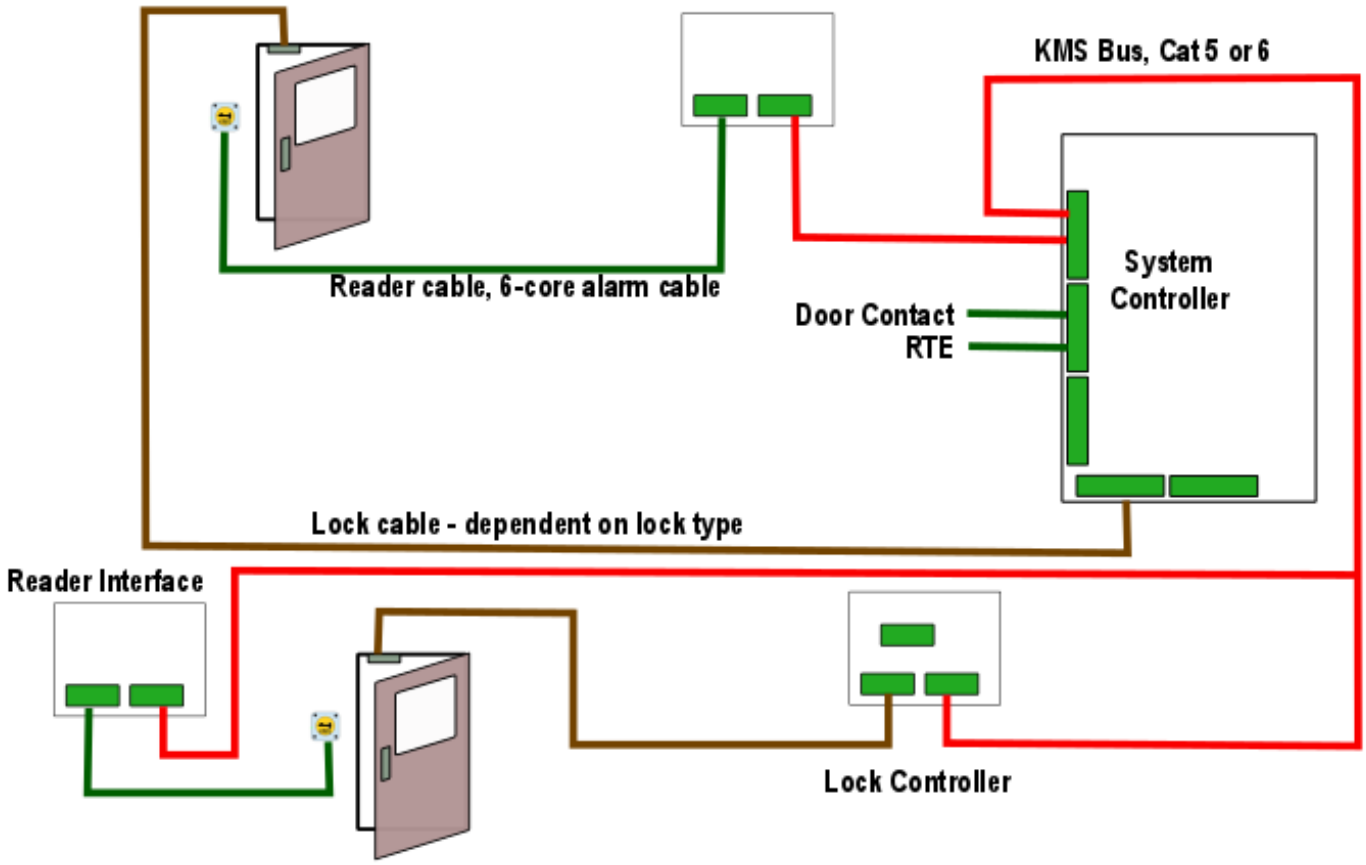
LOCK SUPPRESSION

A Metal Oxide Varistor (MOV) MUST be fitted across the cables feeding power to the electrical or magnetic lock. The MOV will suppress the back E.M.F. spike returning to the host controller when power is removed from the lock. The MOV should be fitted as close as possible to the electric or magnetic lock. Failure to properly supress locks will void any warranties to that piece of equipment.

BASIC SYSTEM WIRING

SYSTEM WIRING OVERVIEW

This figure shows a basic system setup showing all components.



The following diagrams breaks the connections into these blocks:

- Controller with Lock direct and via a Lock Controller
- Controller with Reader Interface / Reader

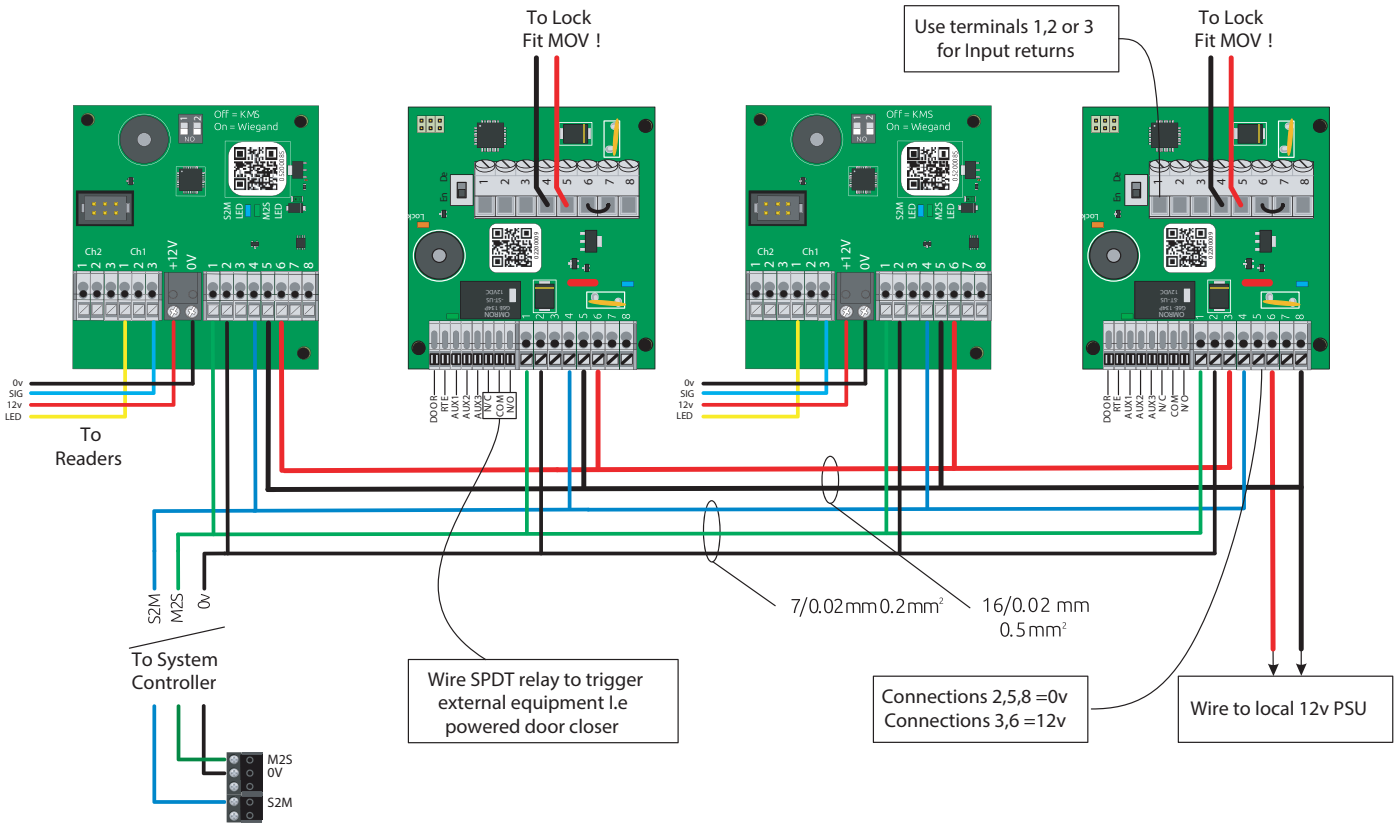
SYSTEM WIRING EXAMPLE 1

This image shows a system wired to its local power supply with CAME KMS BUS data connections direct to the System Controller.

In this example CAME KMS are powering the locks directly. This is the recommended installation configuration. Each Lock Controller does provide a normally open/normally closed volt free relay in order to trigger external equipment, for example a powered door closer or door entry system.

Note: Always isolate power before making or breaking connections.

Typical example of daisy chained chained Rreader Interfaces and Lock Controllers utilising local power supplies within each cabinet. This assumes the System Controller is in a separate cabinet with BUS runs of M2S, S2M and 0v back to the System Controller or next cabinet. Ensure BUS runs are made using Cat5, Cat5e or Cat6 cabling. Copper only no CCS or CCA to be used.



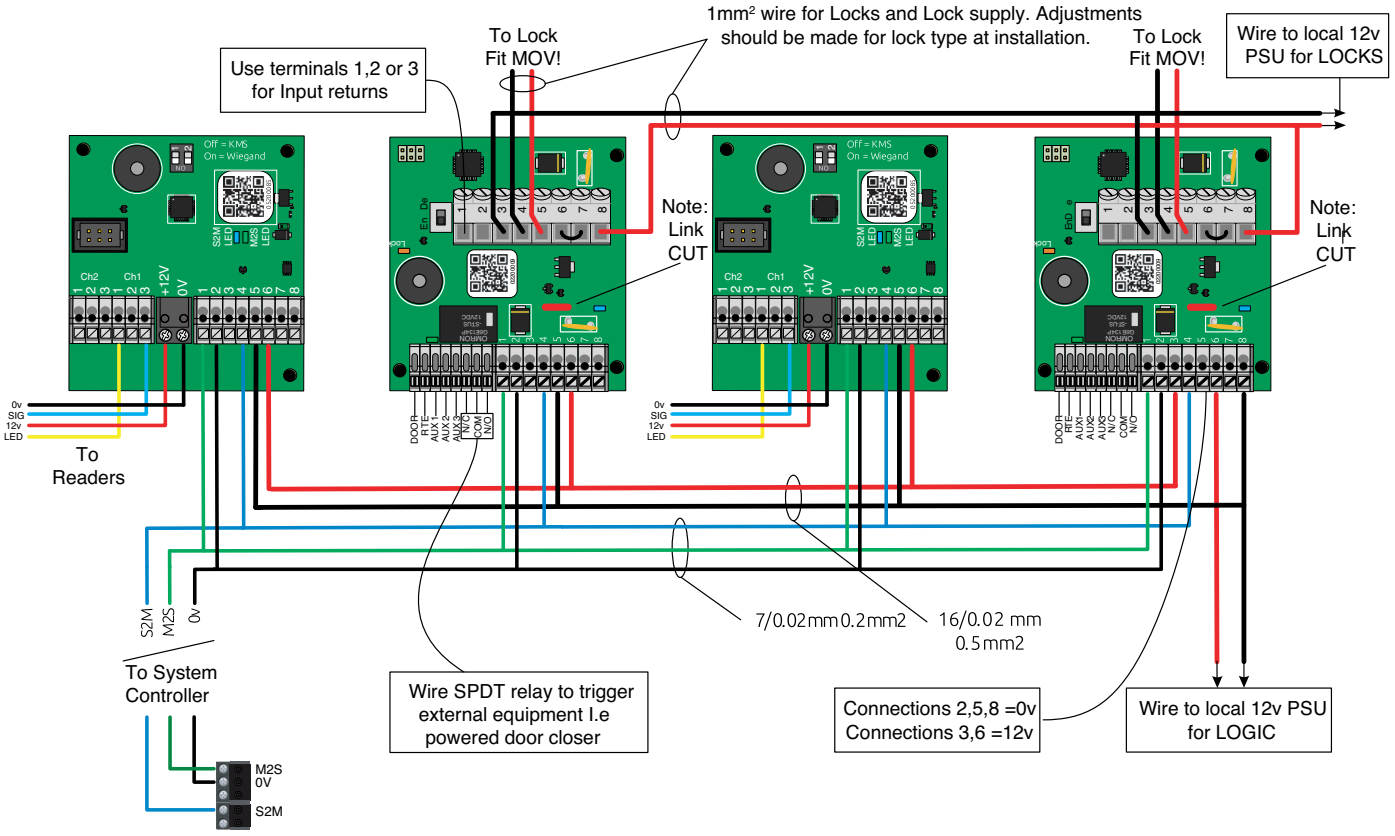
SYSTEM WIRING EXAMPLE 2

This image shows a system wired to a local power supply for the logic side of the controller but NOT lock power. A separate power supply is supplying the locks. CAME KMS BUS data connections are wired between system cabinets. This is wired so CAME KMS are providing the lock power directly from the Lock Controllers.

LK1 (red wire link) is cut to ensure +VE lines are not joined between power supplies. This method of system wiring is uncommon, please contact CAME KMS Technical Support for further information.

Note: Care MUST be taken cutting LK1 due to proximity to other PCB components! CAME KMS will not be responsible for damage caused by mis-installation. Always isolate power before making or breaking connections.

Daisy chained Reader Interfaces and Lock Controllers using separate power supplies for lock and logic. The Rred wire link has been cut to ensure +VE lines are not joined between separate supplies. In this example the end Lock Controller is powering the other nodes.



SECURITY / ALARMS

POWER CUT

If there is a power cut, then the system is set up to automatically unlock the doors when Fail-Safe locks are used. Where Fail-Secure locks are used a backup supply may need to be fitted to ensure doors can be opened in case of emergency.

When power is returned the system resets and locks operate as normal.

LOSS OF DATA

If the (data) line from the BUS to the Reader Interface is cut (M2S/S2M) then the Reader Interface alarm sounds for 30 seconds and then beeps every 5 seconds until the problem is fixed. The light on the corresponding reader also flashes and an alarm event is generated.

If data is lost to the Lock Controller then an alarm sounds and, dependent on the configuration, the RTE and Lock Controller does/does not operate the lock outputs to make ‘safe’ the building.

SYSTEM CONTROLLER

The door contact input on the System Controller is Off by default (0 seconds). Changing this between 1 and 255 seconds means that if the door does not close for any reason (e.g. propped open) there is an alarm on the controller and a Door Left Open event is generated.

If the door (contact) is opened without the use of an RTE/authorised token, then NO alarm will sound on the controller but a Door Forced event is generated.

Note: Door Forced alarms will automatically be acknowledged once the door contacts have been reinstated.

COMMUNICATIONS MODULE

The previously built-in 2G mobile communication has been replaced with an interchangeable Communications Module or ‘CM’.

An upgraded 4G modem, combined CATO with on board RS232 / RS485 communications and Wi-FiEthernet/IP will beare available in the future,. This not only provides greater flexibility in installation but allows for future upgrade and alternative means of external communications. For instance, the 4G modem can be dropped for Ethernet-F, furthermore additional Mk3 System Controllers can be connected to a ‘CM-Multi’ distributing local intelligence where the system requires greater security.

The Communications Module is available in three versions.

Each variant has been designed with certain communication solutions in mind. Customers can choose a CM to suit their needs at the time of order.

The 4G modem uses a standard size SIM and has no user programmable functions.

A standard SMA input is provided for the antenna. The antenna should be as close as possible to the controller to ensure the best signal strength. This means using the shortest possible cable available whilst still fitting the antenna in the best external location. A large excess of antenna cable will only reduce signal strength at the modem, a small excess should be tidied whilst also trying to avoid the formation of coils. If the excess is great, then the next lowest size of antenna should be used.

A non-steered roaming SIM is provided with each System Controller capable of roaming all networks. These are provided by CAME KMS who manage the SIM contracts. A customer may want to provide their own SIM, in this case the modem requires different configuration. Please contact CAME KMS Technical Support for more information.

COMMUNICATION MODULE VARIANTS

Note: CAME KMS reserve the right to change the specifications without prior notification.

CM-4G features

- 4G LTE Modem (Network Technology SIM card dependant).
- 5x LED signal strength indicators for easier and more accurate antennae installation.
- 5x LED Communication status indicators. Easy indicators for remote connection status.
- Controls up to 16 doors.

CM-IP features

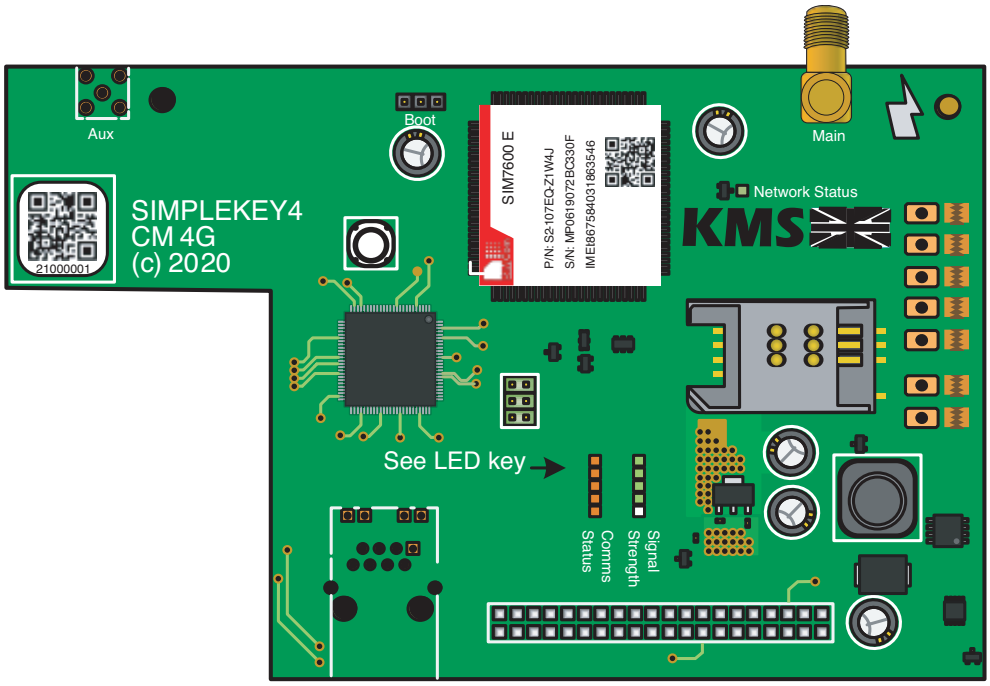
- Ethernet 10/100 Base- T 1x Ethernet Socket.
- 1x Two wire RS-485 communication bus.
- 1x RS-232 serial communications bus.
- Controls up to 16 doors.

CM-Multi features

- 4G LTE Modem with additional radio and antenna (Network Technology SIM card dependant).
- 5x LED signal strength indicators for easier and more accurate antennae installation.
- 5x LED Communication status indicators. Easy indicators for remote connection status.
- Ethernet 10/100 Base – T1x Ethernet Socket.
- 1x Two wire RS-485 communication bus.
- 1x RS-232 serial communications bus.
- Controls up to 64 doors when connected with 3x CM-IP as a master sharing its 4G cellular connection.

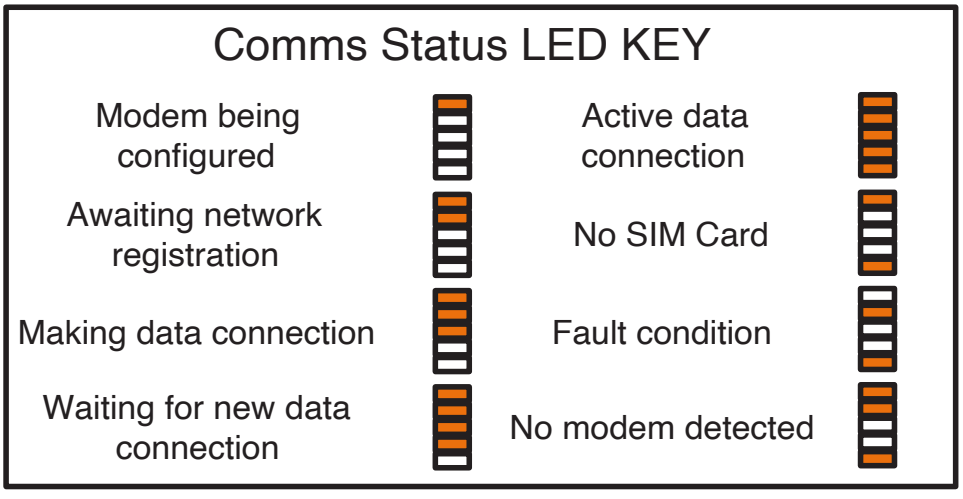
Note: Location of the antenna is important to ensure the best signal level. Testing signal levels to get the best location should be an integral part of the initial site survey. Further details on recommended cellular signal testers are available from CAME KMS Technical Support.

CM-4G COMMUNICATIONS MODULE OVERVIEW



The above drawing depicts a typical 4G Modem-only variant of the Comms Module. There are no Ethernet or auxiliary RS232 / RS485 communication ports.

Communications Module LED Key



Network Indicator LED

This single green LED is found just above the CAME KMS Logo. Its operation state is as the table below.

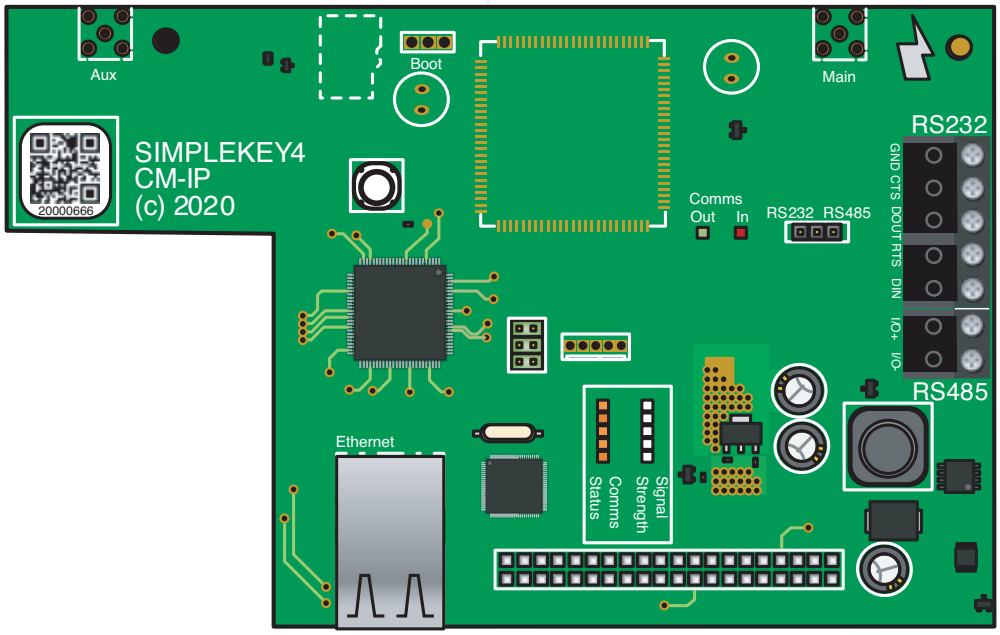
LED State	Indication
Off	No power to modem or sleeping.
On with no flashing	Searching for valid network registration.
Slow flashing	Registered on network with 2G/3G data connection
Fast flashing	Registered on network with 4G data connection.

Signal strength

A series of five green LEDs showing live signal strength. This status is refreshed every two seconds.

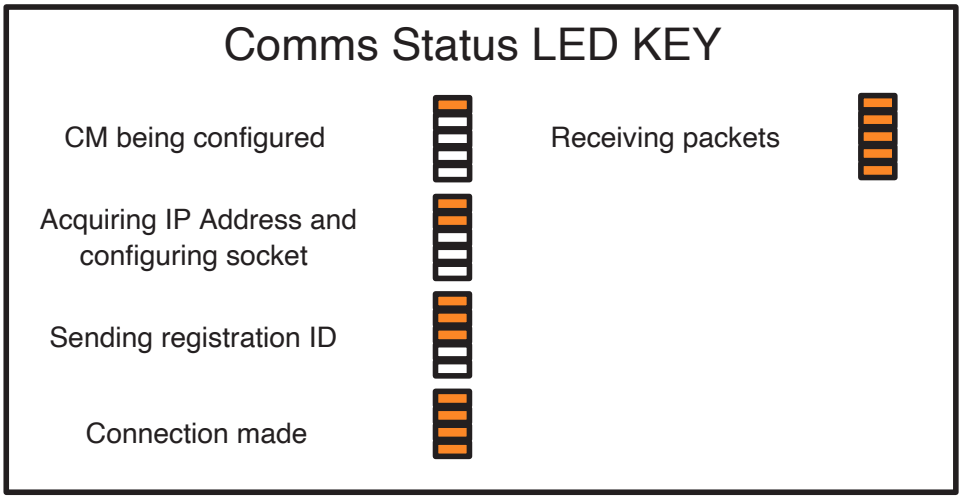
LEDs Lit	Signal Strength %	Signal Strength 0-31
0	0 to 4 %	0-2
1	5 to 24 %	3-7
2	25 to 44 %	8-13
3	45 to 64 %	14-20
4	65 to 84 %	21-26
5	85 to 100 %	27-31

CM-IP COMMUNICATIONS MODULE OVERVIEW



The above drawing depicts a typical IP variant of the Comms Module. There is no 4G modem nor associated SIM card try or antenna connection.

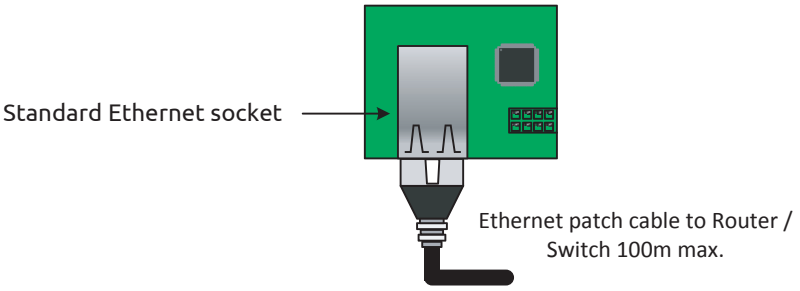
Communications Module LED Key



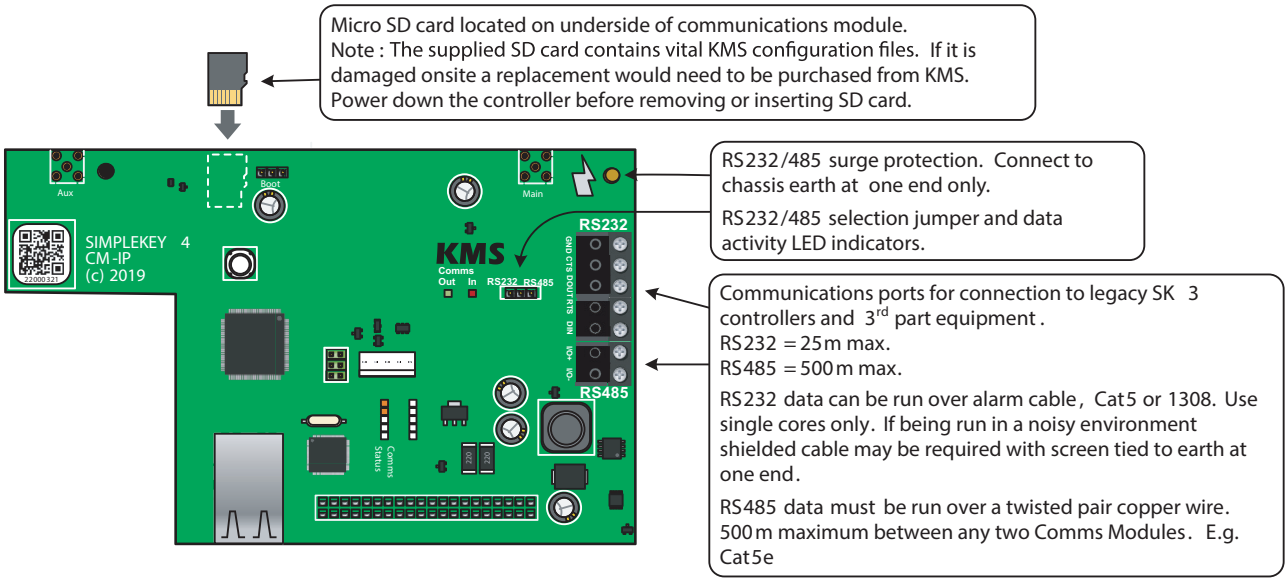
Connections

Ethernet

The CM-IP features a single Ethernet socket for connection to a local network switch or router. The maximum cable run between CM-IP Ethernet and network switch/router is 100m. Standard category 5 patch cables should be used.

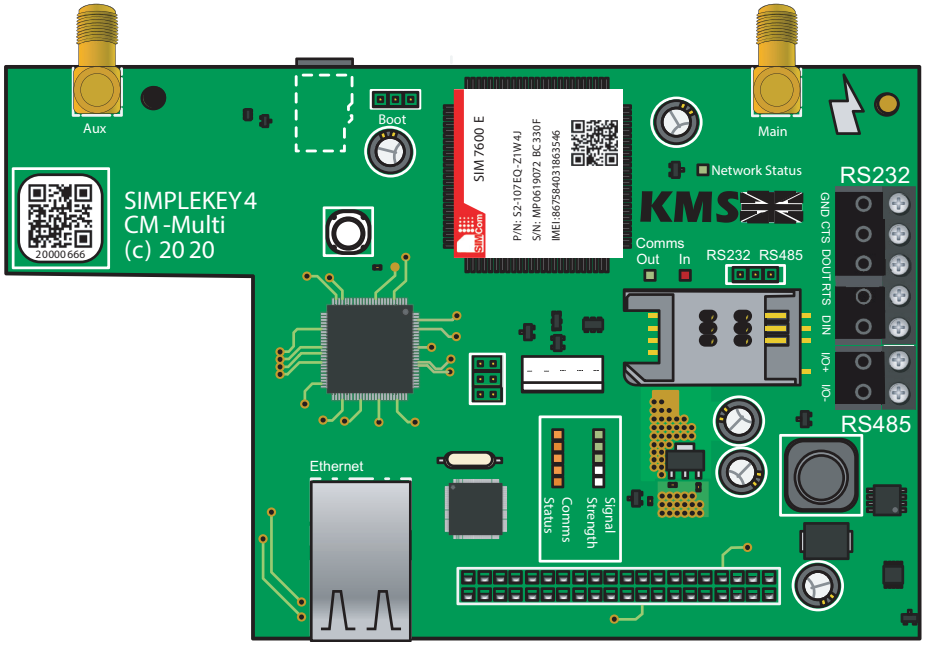


Auxiliary Communications Ports



Warning: Do NOT connect the CM-IP Ethernet socket to the RJ45 socket on the system controller.

CM-MULTI COMMUNICATIONS MODULE OVERVIEW



The above drawing depicts a typical Multi variant of the Comms Module. All functions of the CM-4G and CM-IP are combined into this variant.

Communications Module LED Key

The communications LEDs behaviour will depend on what function the CM-Multi is configured for. See CM-4G or CM-IP for LED key.

Connections

Ethernet

A standard RJ45 socket for connection to:

- Broadband / IP internet access.
- Connection of multiple System Controllers via Communications Modules.
- Directly connect to broadband internet instead of the 4G modem if installation dictates this later.
- Maximum 100m between Communications Module and IP network.

RS232

A configurable serial communications port. Intended uses include:

- Up to 7x SimpleKey 3 legacy controllers.
- 1x SimpleKey 4 System Controller with CM-IP.
- Future connection to 3rd party devices.
- Maximum 25m between Communications Module and end device.

RS485

A two wire RS485 communications port. Intended uses include:

- Up to 7x SimpleKey 3 Legacy controllers.
- 1x SimpleKey 4 System Controller with CM-IP
- Future connection to 3rd Party devices.
- Maximum 500m between two Communications Module and end device.

CONNECTING ADDITIONAL SIMPLEKEY 4 SYSTEM CONTROLLERS

A maximum of 4 System Controllers can be connected using the Ethernet port and IP communications sharing the 4G modems internet connection. There are several ways this can be achieved depending on how many System Controllers need to be connected, these are:

2 x System Controllers

Master System Controller with CM-Multi

Slave System Controller with CM-IP

Connect using Cat 5 Ethernet patch cable- (if switch has auto MDIX then a crossover cable can be used) or patch cable from each Communications Module to network switch.

3 or 4 System Controllers

Master System Controller with CM-Multi

Slave System Controllers 2-4 with CM-IP

Connect using Cat 5 Ethernet patch cable from each Communications Module to a network switch.

The maximum cable run between CM-Multi or CM-IP and network switch is 100 metres. Theoretically additional network switches can be used to relay the signals and extend the cable run by an additional 100 metres each time. If low quality networking hardware is used and/or poorly terminated ethernet cabling, then signal transmission may be reduced or in extreme cases be non-functional.

Note: CAME KMS highly recommend using high quality, branded networking equipment. It is the installers responsibility to ensure correct and proper IP network installation and configuration.

Auxiliary antenna

A second SMA antenna connection is provided on the CM-Multi. This antenna can be referred to as a diversity antenna and may help improve signal quality and speeds.

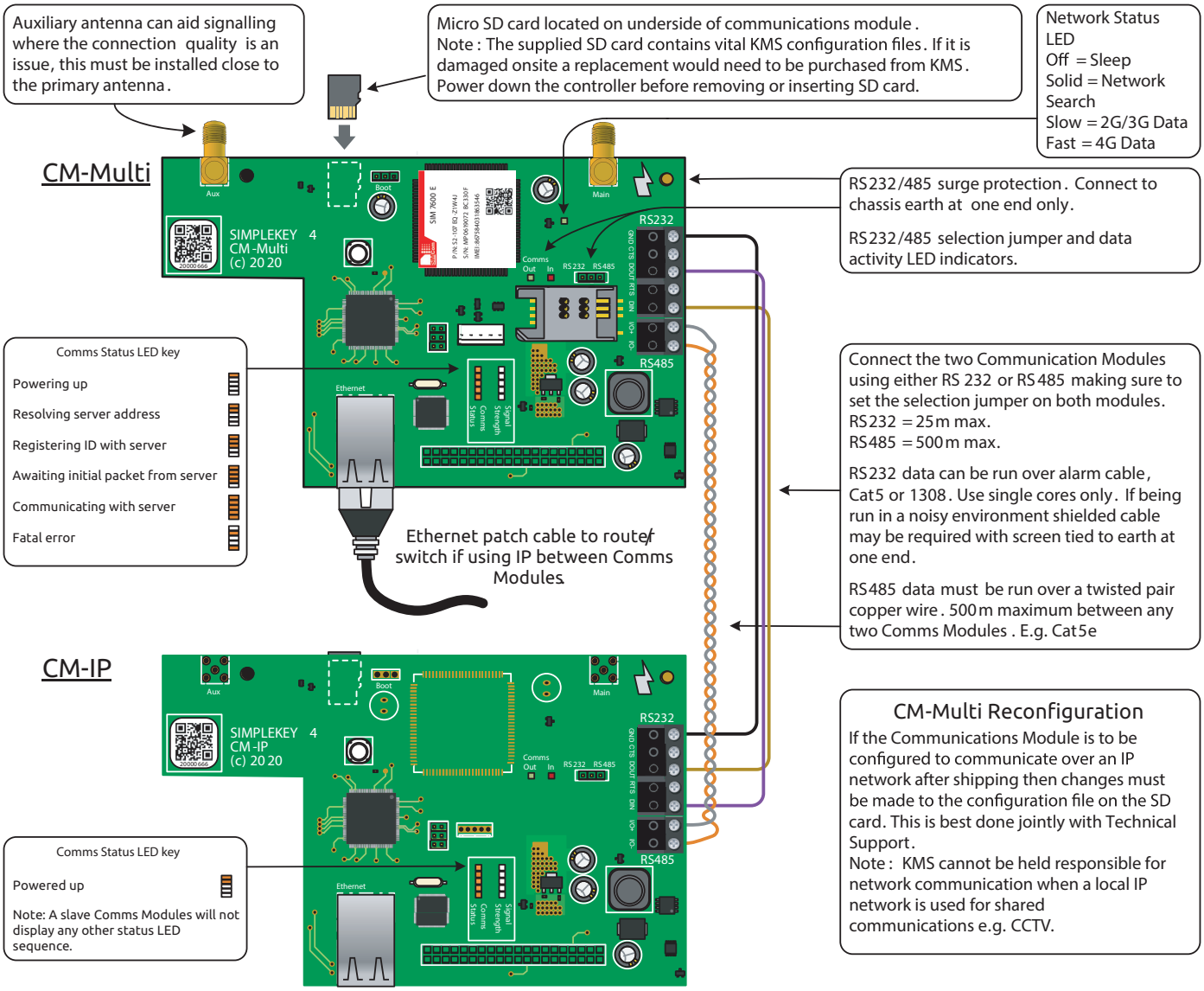
The principal being the modem receives two separate signals which are processed and combined at the baseband to maximize the received signal-to-interference-plus-noise ratio (SINR) to form a single received signal.

The diversity antenna must be installed near the main antenna, not more than 500mm apart but no closer than 200mm together.

The Diversity antenna can be the same type used for the main antenna.

CM-MULTI TO CM-IP (CATO REPLACEMENT) CONNECTION EXAMPLE

Below depicts a CM-Multi connected to a CM-IP using either the RS232 or RS485 communications ports. Only one of these ports can be used at any one time. Connecting the two Comms Modules using IP is the optimum method See details below for permissible cable runs and configuration.



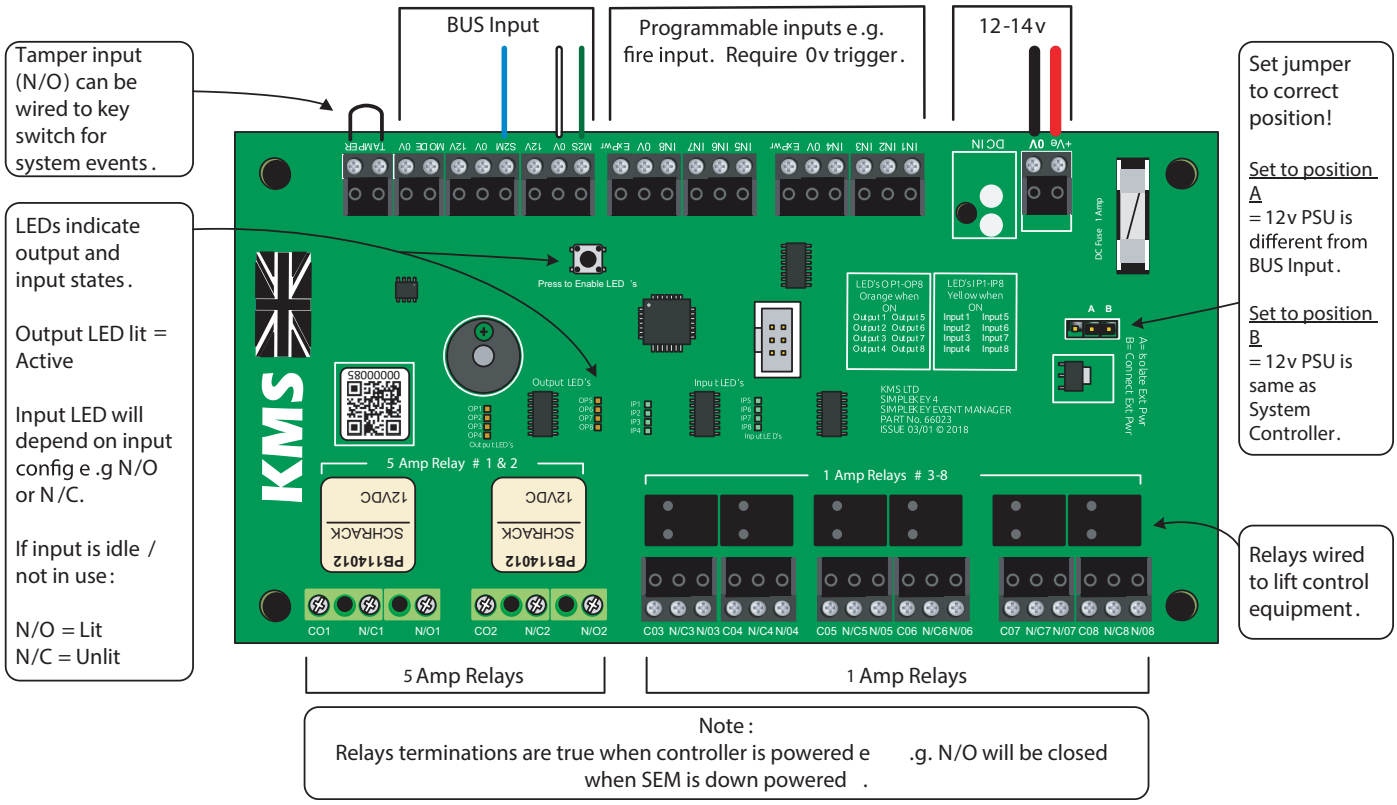
SEM

INTRODUCTION

The SimpleKey Event Manager (SEM) has eight outputs in the form of double-pole volt free relays, and eight local inputs. A local input may be a switch or trigger from 3rd party equipment. In addition to local inputs, an external reader can be used as a form of input. Typical uses for the SEM would be lift control where a single reader is used, and various lift buttons are activated depending on the token holder's access profile. The example below shows lift control but also the SEM being used to switch on lighting at the same time.

CONNECTIONS

All connections to the SEM are made by terminal blocks situated at the top and bottom of PCB.



The SEM relays and often referred to as outputs. They run with relay 1 starting on the left most side and ending at relay 8. The relay specifications are as follows:

- Relay 1 and 2 – 5A volt free SPDT. 48v maximum.
- Relay 3 to 8 – 1A volt free SPDT. 48v maximum

Inputs are marked along the top side from IN1 to IN8. All inputs require a 0v trigger and can be set as NO or NC. Several 0v connections are provided.

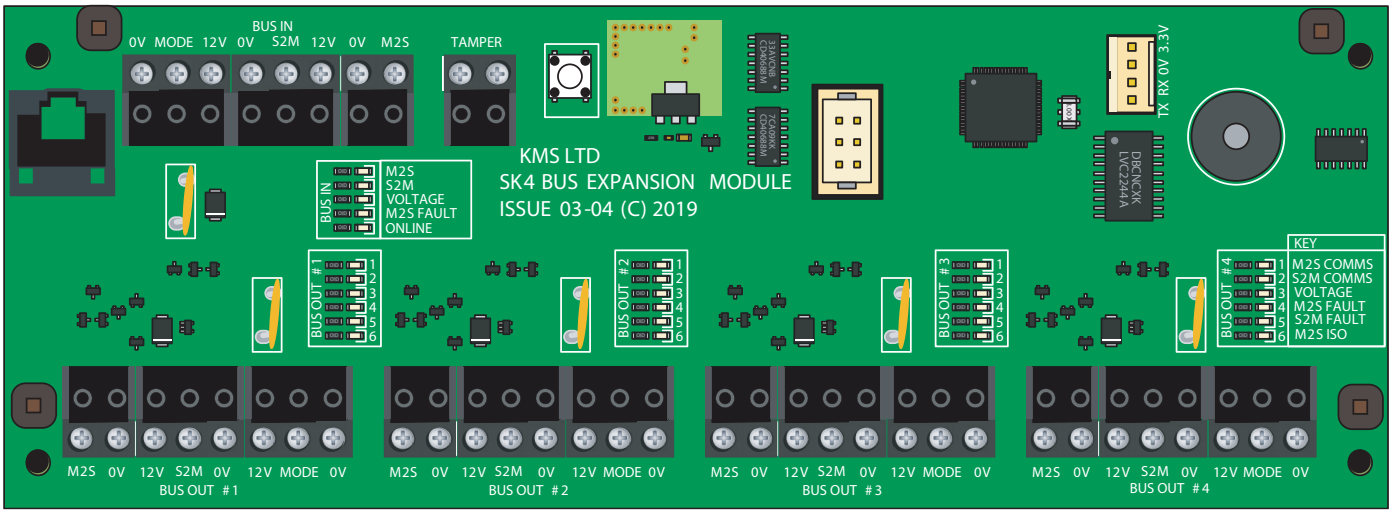
BEM

INTRODUCTION

The BUS Expansion Module (BEM) has been developed to allow greater flexibility in installation layout with extended BUS communication runs. The BEM splits the BUS communications into four isolated output streams from one input. Built in diagnostics LEDs indicate potential wiring faults and low voltage levels. Diagnostic information is also synchronised with SimpleKey web providing system changes and configuration to be applied remotely.

BUS EXPANSION MODULE OVERVIEW

All connections to the BEM are made by terminal blocks situated at the top and bottom of PCB with the addition of a RJ45 connector for connection to the I2C2.



The above drawing depicts the BUS Expansion module.

BUS INPUT AND OUTPUT CONNECTIONS

The connections below are identical for both the input and outputs.

M2S: Communication BUS — Master to Slave
0v
12v
S2M: Communication BUS — Slave to Master
0v
12v
BUS mode: Not used
0v

Note: The RJ45 socket is intended to carry all system data but power the BEM only, wire 12v and 0v using suitable gauge cable to the PSU if BUS output 12v and 0v is to be used.

BUS OUTPUTS

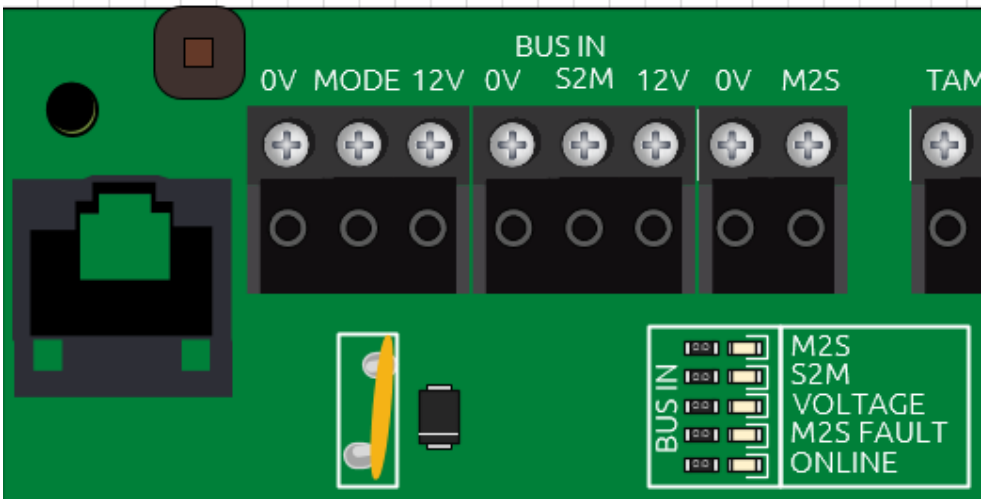
Each output consists of an eight-way pluggable connector for BUS communications and power. The maximum power of each output is limited to 4 Amps via an on-board thermal fuse, the total maximum output across all four outputs must not exceed 5 Amps. The length of run between any BEM output and additional SimpleKey 4 node(s) will vary due to several factors for example, system load, cable lengths, cable type and number of nodes connected.

Volt drop across an output will need to be a consideration so a local power supply may be needed. CAME KMS would recommend the 12v and 0v outputs are used to power nodes no more than 25metres from the BEM.

FAULT INDICATOR LEDS

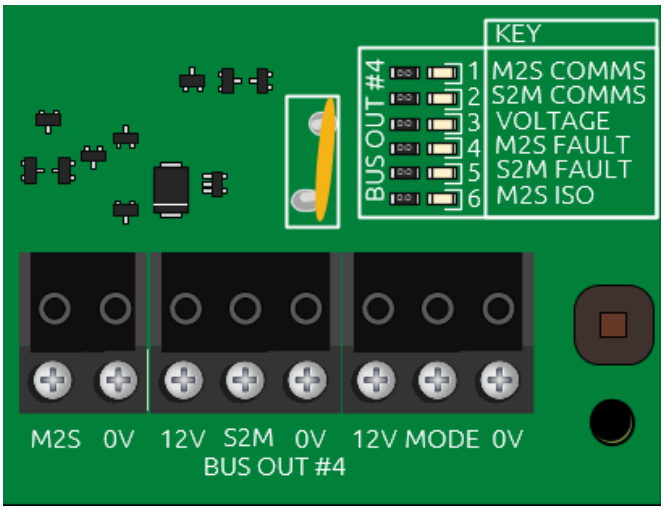
Each input and output stream has a set of LED indicators for communications and power, the meaning of these are found in the tables below.

BUS input connector and LED key:



Key	LED on	LED off
M2S	Comms OK	No M2S input
S2M	Comms OK	No S2M output
Voltage	Not flashing = 12v-14v	Flashing = <12 or >14v
M2S Fault	Fault on M2S from controller / shorted to supply	No fault condition
Online	Node online	Node offline

BUS output connector and LED key:



Key	LED on	LED off
M2S Comms	M2S Input OK	No M2S signal detected
S2M Comms	S2M Input OK	No signal or open circuit
Voltage	Not flashing = 12v-14v	Flashing = <12 or >14v
M2S Fault	Short to 0v or 12v	No fault condition
S2M Fault	Short to 0v or 12v	No fault condition
M2S Isolation	Fault detected and isolated	No fault condition

GUARANTEE

All SimpleKey 4 hardware devices carry a limited 5-year guarantee against defects in materials or workmanship except for tokens (fobs) which carry a lifetime guarantee.

The guarantee does not cover:

- Poor or incorrect installation.
- Poorly maintained equipment.
- Interference/damage by third parties and/or third-party products or services.
- Vandalism.
- Water damage including excessive levels of humidity.
- Lightning strikes.
- Tenant/third party misuse.
- Mains supply faults which damage the equipment.
- Acts of god.

Note: Guarantees only apply when the equipment has been installed by a CAME KMS approved and trained installer.

RETURN MERCHANDISE AUTHORISATION (RMA)

CAME KMS may, at their discretion, offer an advance replacement device for example, the removal of a controller for repair may cause inconvenience to the end user. The advance replacement would be sent to the contractor to fit on site and the suspect device returned to CAME KMS for inspection and conclusion. CAME KMS will then advise if the fault is covered under guarantee or not.

If this service is to be utilised, then you are agreeing to the CAME KMS RMA policy, below.

RETURN MERCHANDISE AUTHORISATION (RMA) POLICY

Effective October 2020

By utilising CAME KMS's RMA advance replacement service, you are agreeing to the following terms:

- All deemed faulty devices MUST be returned to CAME KMS within 10 working days unless an extension has been agreed in writing.
- Any deemed faulty not returned to CAME KMS within the agreed time frame will be charged for at **list price**.
- Any deemed faulty device returned to CAME KMS and found to be damaged (for example but not limited to: - excessive forces, mis-wiring, circuit damage etc) will be charged for at **list price**.
- Any device returned for inspection and testing, either in or out of guarantee and found to be in perfect working order will be charged for as 'No Fault Found' (NFF).
- NFF RMAs will incur a charge to cover time spent testing which can be extensive. It is vitality important ALL RMAs are returned with a detailed fault description, this leads to full and correct diagnosis at CAME KMS, reducing the risk of a NFF conclusion being reached.
- NFF RMAs will incur a flat rate charge of £45 per device unless by prior agreement of management.
- Repairs are charged at a minimum rate of £105 per item unless specifically agreed by management. Some items may require further repairs which carry a higher charge, this will be agreed before repair work starts. If an item is found to be uneconomical to repair, then this will be declared after inspection. The item can then be WEEE recycled free of charge or returned subject to the normal carriage costs.
- 5-year parts guarantee on CAME KMS manufactured items.
- Items manufactured by 3rd parties have a 2-year guarantee.
- All return carriage costs are to be covered by the customer.
- CAME KMS highly recommend signed for return postage and cannot be held responsible for undelivered RMAs.

GLOSSARY

BR – BUS Reader

BIM – Bus Isolation Module

C/O – Common Relay Connection

CD – Communications Device

CM – Communications Module

DE-EN – De-energised Default

EN – Energised Default

FP – Front Panel

LC – Lock Controller

M2S – Master to Slave

MED – Main Entrance Door

N/C – Normally Closed Relay Connection

N/O – Normally Open Relay Connection

OVR – Over-ride

RED – Rear Entrance Door

RI – Reader Interface

RTE – Request to Exit

S2M – Slave to Master

SC – System Controller

SEM – SimpleKey Event Manager

SPDT – Single Pole Double Throw

CM-4G – Communication Module 4G

CM-IP – Communications Module Internet Protocol

CM-Multi – Communications Module Multi

CAT5 – Category 5 cable.

IP – Internet Protocol

RMA – Return Merchandise Authorisation

NOTES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