The following invention was conceived with these shortcomings in mind.

SUMMARY OF THE INVENTION

According to a first aspect of the present invention, there is provided a system for unlocking a lock comprising: an electronic locking core for insertion in a lock body, and a separate power source; wherein the locking core comprises: a casing having an accessible end and an inaccessible end, when inserted into a lock body, an electronic circuit board housed within the casing for receiving electronic data from a remote device that is separate from the locking core and the separate power source, a motor housed within the casing, the electronic circuit board configured to activate on receipt of data containing a unique data code from the remote device and configured to drive the motor upon receipt of the unique data code from the remote device, wherein the motor is configured to move a locking member located at the inaccessible end of the casing and externally thereof that transitions a latch of the lock between a locked and an unlocked configuration; and a terminal located at the accessible end of the casing in electrical contact with the internal electronic circuit board to receive power from the separate power source; wherein the separate power source comprises at least one battery contained within the housing of a power cartridge separate from and connectable to the locking core, the power cartridge including a co-operating terminal at one end of the power cartridge housing configured to connect with the terminal at the accessible end of the locking core casing to allow power from the separate power source to activate the electronic circuit board and motor within the casing; and wherein the power cartridge is external of the lock body when it is connected to the locking core within the lock body and the motor of the locking core is only activated to move the locking member to unlock the lock when the power cartridge is mechanically connected to the locking core casing such that the power source is electrically connected to the motor and the electronic circuit board receives the unique data code from the remote device.

An advantage of providing a separate power source that is connectable to the locking core is that it allows the locking core to be powered as and when needed. For example, a service person need only connect the power source to the locking core when the locking core is required to be opened and whilst the power source is not connected to the locking core, the security of the lock is left uncompromised.

The separate power source is preferably external of the lock body when it is connected to the locking core within the lock body.

In some embodiments the power source may be a battery. The power source may be a standard battery size.

The unique data code may be transmitted wirelessly to the locking core from the remote device. The remote device is preferably a cellular device. Alternatively, the unique data code may be transmitted to the locking core via a wired connection.

The unique data code may be created and sent from the remote device via an app. The remote device may be triggered to transmit the unique data code by a signal from the electronic circuit board of the locking core, when the remote device is within the predetermined operational zone and the power cartridge is connected.

The remote device may be selected from any one of the following: a mobile phone, smart phone, laptop, Mac, PC, tablet and e-watch.

There is disclosed an electronic locking core for use in the system of the first aspect, wherein the locking core comprises: a casing adapted for insertion into a body of a lock, an electronic circuit board housed within the casing for receiving electronic data from a remote device, a motor housed within the casing,
the electronic circuit board configured to activate on receipt of data from the remote device containing a unique data code and configured to drive the motor upon receipt of the unique data code from the remote device; a locking member located at one end of the casing configured for engagement with a latch of the lock, wherein the motor is configured to move the locking member located at the said one end of the casing to transition the latch of the lock between a locked and an unlocked configuration; and a terminal located at the opposite end of the casing in electrical contact with the internal electronic circuit board and configured to receive power from a separate power source.

The motor may have a limiter that limits rotation of the locking member to within an angular range.

There is disclosed an electronic locking core comprising: a casing adapted for insertion into a body of a lock; an electronic circuit board housed within the casing for receiving electronic data from a remote device; a motor housed

with a bolt or bar of the lock. The locking member may comprise a boss that extends from the locking member to engage and drive a rotational bolt or bar of the lock.

In the case of a padlock, movement of the rotational bolt or bar may release a pair of locking balls from locking recesses at a heel and a toe of the shackle, respectively, of the padlock.

The system may include a padlock having a body which is fitted with the electronic locking core.

There is disclosed a method of installing an electronic locking core in a lock comprising a lock body, a locking cylinder, a latch or a bolt, the method comprising the steps of: releasing and removing the locking cylinder from the lock body; installing the electronic locking core into the lock body; aligning a locking member of the electronic locking core with the latch or bolt of the lock; and securing the electronic locking core within the lock body. The lock may be a padlock. The lock may be a cam lock.

According to a second aspect of the present invention, there is provided a method of using the system as defined in the first aspect, the method comprising the steps of: connecting the separate power source to the locking core to activate the electronic circuit board and motor within the locking core; locating a remote device in a predetermined operational zone of the electronic locking core; activating the remote device to transmit a unique data code to the electronic circuit board, wherein the circuit board draws power from the power source and on accepting the unique data code activates the motor to drive the locking member of the locking core to release a latch of the lock.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention are illustrated by way of example, and not by way of limitation, with reference to the accompanying drawings, of which:

Figure 1 is an exploded perspective view of a locking core according to an embodiment of the invention, illustrating a demountable power cartridge for powering the locking core;