LASERMET

ICS-KP12
INSTRUCTION MANUAL

ACCESS KEYPAD WITH
FAIL-SAFE OVERRIDE TIMER

Issue 3

LASERMET ICS-KP12
Instruction Manual

Contents

1 Safety Warnings

This device is intended to be used as part of a safety system which may be used to protect personnel and equipment from possible injury, damage, or loss.

As such it must be installed and wired according to these instructions and tested by suitably qualified persons. No attempt may be made to tamper with the parts, open them, or use them outside of the parameters contained herein.

The units are only designed to be fixed to surfaces using their inbuilt fixing holes. They must not come into contact with each other or any other moving part when in use. The parts should never be subject to impact or mechanical strain.

Safety switches should never be defeated or bypassed. It is imperative that all steps are taken to ensure that any spare actuators are made unavailable, such that they cannot be used to defeat the switch or reduce the protection offered by the system in any way.

2 Concept

The ICS-KP12 Keypad is intended to be used in conjunction with Lasermet's Laser Interlock systems for the purpose of inhibiting access to a hazardous area to unauthorised persons. Normally this means persons without the necessary training and personal protective equipment for the area concerned. The keypad is sited outside a door which is electrically locked and monitored by the interlock system.

The keypad is not intended to be used as part of a security system.

The keypad has two outputs which may be programmed to activate for a defined time interval when the correct 4-digit user code is entered. When wired into a Lasermet interlock system, one output is used to unlock the door and one to activate the override function within the interlock control system to allow the door to be opened without tripping out the laser.

It is possible to disable either of the outputs. This may be used for example where the door is monitored by the interlock system but is not fitted with an electric lock, in which case the door lock function would be disabled.

The override timer function has a fixed hardware backup with contact monitoring so that should the programmed time function fail the override will still cease after around 30-45 seconds, restoring the full protection of the interlock system.

Lasermet provides a full range of laser interlock equipment including control systems, interlock switches, illuminated warning signs, laser shutters, door locks, external power supplies etc. which can be connected to provide a complete laser interlock system. Full support, design and installation is available from Lasermet, please contact us for any queries. Contact details are given at the end of this manual.

2.1 Configuration Options

The ICS-KP12 Keypad has two outputs which activate for a set time when the correct 4-digit user code is entered: the Override output and the Door Unlock output. Each output illuminates a corresponding indication on the keypad when activated.

Each output may be independently programmed to activate for a set time between 1 and 30 seconds when the correct code is entered on the keypad. An output is disabled by programming it to operate for 0 seconds.

For laser interlock systems in which the entry door is electrically locked, e.g. by a maglock, the Door Unlock output should be used to release the door, and the Door Unlock time should be programmed for the required door lock release time.

If there is no electric lock on the door, the Door Unlock output is not used and the Door Unlock time should be set to 0 to disable the indication on the keypad.

The entry door will normally be fitted with an interlock switch that indicates to the interlock control system that the door has been opened and this will cause the laser to be disabled. The Override output should be used when it is desired to be able to open the entry door without disabling the laser. The Override time should be set to the shortest reasonable time required for the door to be opened and then closed again.

If it is desired to be able to release the door lock only i.e. the laser will be disabled when the door opens, the Override output can be disabled by setting the time duration to 0.

The ICS-KP12 has a remote activation input which may be wired to an external pushbutton switch. This is usually provided on the inside of the controlled door and allows persons to leave the controlled area without disabling the laser. When the button is pressed, the keypad performs the same functions as if the user code had been entered.

3 Installation

The ICS-KP12 is designed to be permanently attached to a wall or other fixed vertical surface.

3.1 Positioning

The ICS-KP12 should be mounted in a convenient position for use and wiring. Normally it is located on the outside ('safe') side of the entry door of the controlled area, on the wall adjacent to the door handle, approximately 1.2m up from floor level.

During installation, wired connections will need to be made from the ICS-KP12 to the Interlock Control System and possibly the magnetic door lock, and allowance should be made for the installation of electrical conduit or trunking if required to make entry to the unit.

Ideally the keypad should be attached directly to the wall with the cables being fed from within the wall. For hollow walls this should be straightforward. For solid walls it may be easiest and neatest to feed the cables right through the wall from the other side.

Alternatively, the keypad may be attached to a round conduit box which may be buried or surface-mounted, though this last option will result in the unit projecting further from the wall, making it less stable and more vulnerable.

It is recommended that the centre of mounting is at least 100mm horizontally from the door surround/architrave and at least 150mm from the edge of the door. There must be a flat unobstructed area of wall extending at least 70mm above and 110mm below the mounting centre to allow fitment and removal.

If a Lasermet Miniature Warning Sign is being fitted above the keypad the centres should be at least 140mm apart vertically.

Refer to Figure 1 for details of the fixing holes and cable entry. The wall plate and locking plate are secured using preferably four screws on a 35.4mm square around the cable entry point. The locking plate and plastic wall plate disk are pre-drilled and may be used as a marking template. If using a round conduit box, the holes will align with the cover fixing holes.

Once all the holes have been made, secure the wall plate and the locking plate as shown in Figure 1 with the plastic wall plate against the wall. Check that the plastic wall plate and locking plate are aligned as shown.

Feed the cables through the hole in the centre of the locking plate.

NOTE: Make the electrical connections before attaching the unit to the wall plate, see the Wiring section.

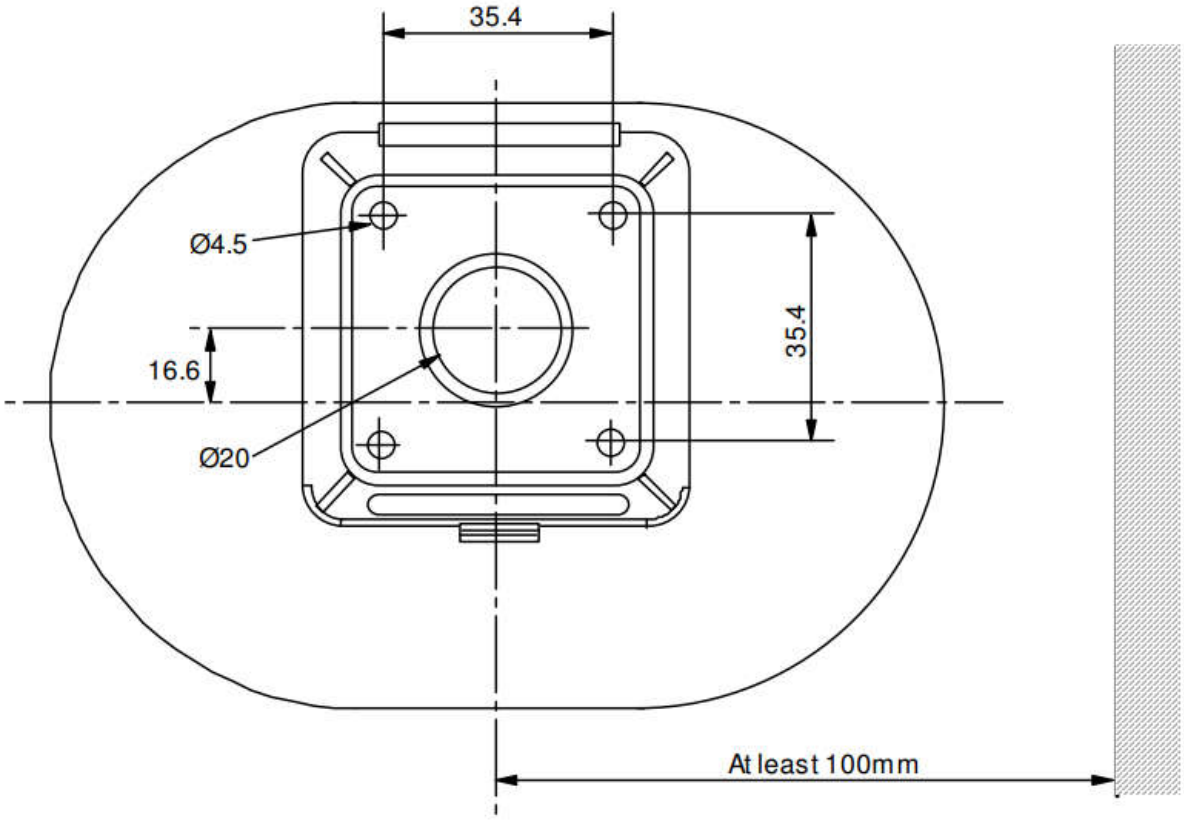


Figure 1. Wall Drilling Details

4 Wiring

The keypad is powered by 24VDC. A four-way plug-in terminal block is provided for the control and power connections, and it is usually easiest to unplug the terminals while making the connections. The connections are shown in Figure 2.

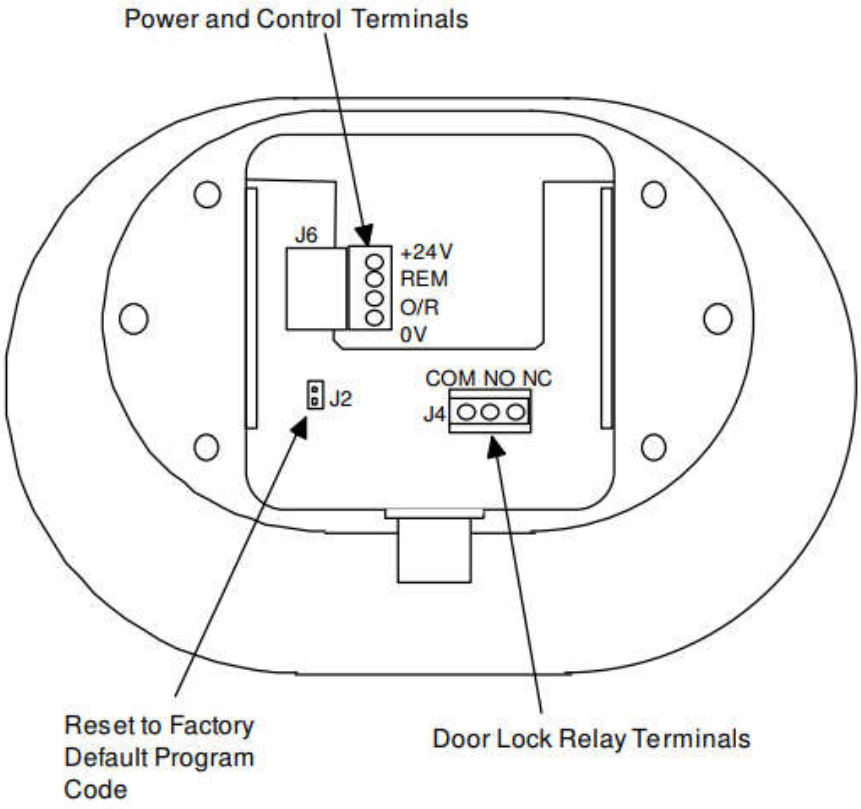


Figure 2. Terminal Identification

The power supply is connected with the positive to the +24V terminal and the negative to the 0V terminal.

The REM input can be connected to a separate pushbutton switch to activate the keypad remotely. When the button is pressed, the keypad activates its outputs according to the programmed settings as though the correct code had been entered on the keypad. The pushbutton is wired between the REM and +24V terminals. If this function is not required, simply make no connection to the REM terminal.

The O/R terminal is the override output. The keypad connects this terminal to +24V while the override is active. This is wired to the override input in the ICS panel.

4.1 Connecting to Lasermet ICS Control Panels

Connecting to ICS-6

Refer to Figure 3.

ICS-6 is equipped with a set of terminals for direct connection to the ICS-KP12. Wire the four terminals labelled +24V, REM, O/R, 0V inside the ICS-6 directly to the corresponding terminals of J17 inside the keypad using four-core low-voltage cable such as burglar alarm cable.

If an internal door release pushbutton is required, it may be connected across the +24V and REM terminals in addition to the four-core cable at either end i.e. inside the keypad or inside the ICS-6, according to installation preference.

Ensure the plug-in jumper link J2 'O/RIDE CTRL' on the ICS-6 Main Circuit Board is set closed (both pins shorted together) so that the keypad can activate the override circuitry inside the ICS-6.

Once the wiring connections have been made, attach the keypad to the wall plate as described later in this manual.

4.2 Connecting to Door Lock

The ICS-KP12 has a relay for releasing electric door locks. The relay is rated at 6A resistive load. This is normally sufficient for two magnetic door locks. Note that magnetic door locks must be fitted with suppression diodes and must be connected the right way round. Magnetic door locks supplied by Lasermet have the diode built in.

The contacts are available on the terminals labelled COM, NO, NC on terminal block J4 inside the keypad. This terminal block is fixed to the circuit board and does not unplug.

The positive feed to the door lock should be connected to the COM terminal inside the keypad, and the NC terminal should then go to the positive connection of the lock, see figure 4. This will enable the keypad to break the circuit to the lock thus releasing it.

Refer to the ICS Manual for more information on wiring door locks to the system.

If no lock is provided this part of the circuit may be omitted, and the keypad may be programmed not to activate the door relay and 'Door Unlocked' indication.

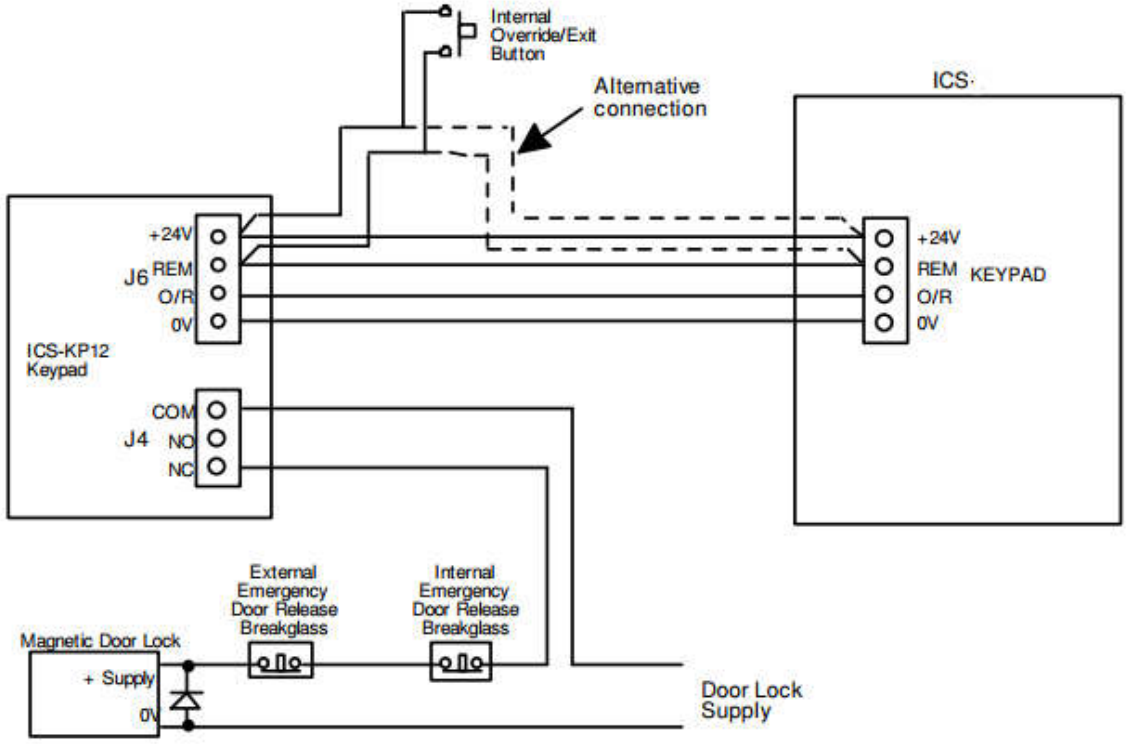


Figure 3. ICS Wiring Diagram

4.3 Connecting two or more Keypads to one ICS

If it is desired to be able to access the controlled area through more than one door while the laser is on, additional keypads may be connected as required.

In this case, to prevent all the doors being released at once when an exit button is pressed, the REM connection from each keypad is not wired back to the ICS, but just wired to the exit button for the relevant door.

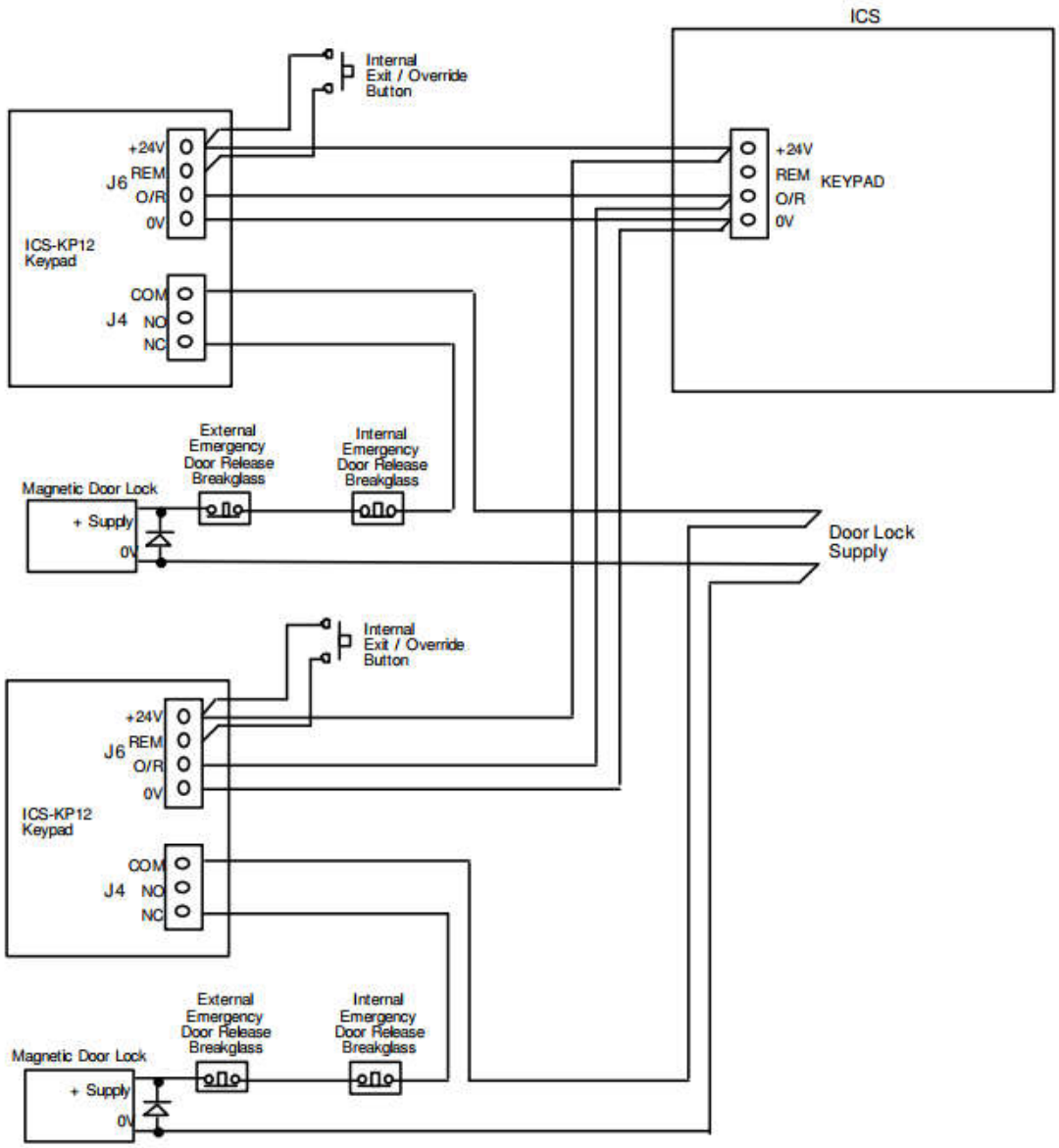
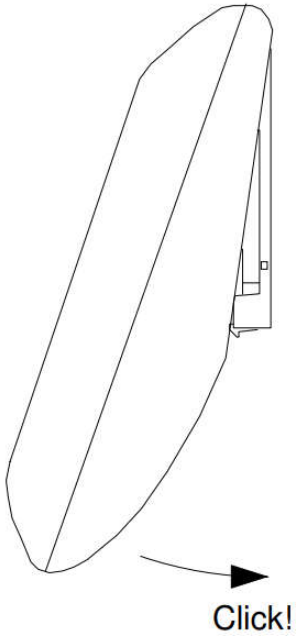


Figure 5. Connecting two Keypads to one ICS

5 Fixing

5.1 Attaching the Keypad to the Backplate

Once all the wiring connections have been made, attach the keypad to the backplate by hooking the top of the keypad onto the backplate and swinging the bottom against the wall. Press the keypad firmly until it clicks into place.



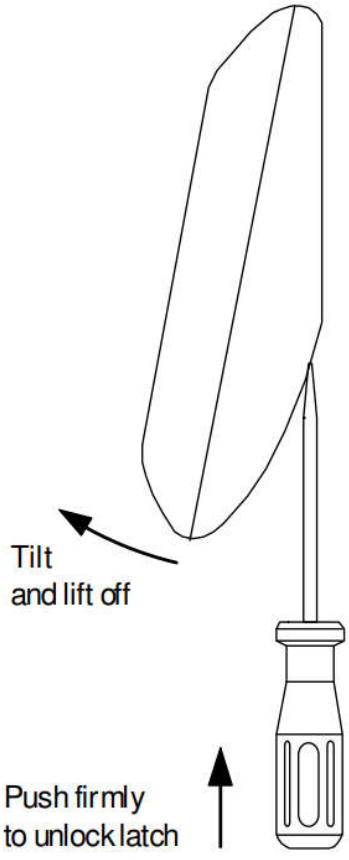
5.2 Removing the Keypad from the Wall

Once the keypad has been locked to the wall, a 5mm flat screwdriver is required to release the locking latch before it can be removed.

Ensure that the supply is turned off.

Insert the screwdriver into the recess in the bottom of the keypad at the back and push the latch upwards to disengage it from the case. Note that the latch is quite secure, and some force may be needed before it releases. When the latch is released it will be possible to tilt the bottom of the keypad forwards and then lift it off the backplate.

Use a 3mm flat screwdriver to disconnect the wires from the terminals.



6 Programming

The keypad should be programmed before use to set the desired operating times and the codes for programming and entry.

Ensure the keypad power is on (blue PWR indicator lit).

To put the keypad into program mode, type the following:

Note that '1234' is the factory default program code. This may have been changed following installation.

The yellow PRG light will flash slowly to indicate the keypad is in program mode.

Now select one of the following choices by pressing the appropriate key on the keypad:

Change User Code

Change Program Code

Change Override Time

Change Door Unlocked Time

Enter Test Mode

Exit and return to normal operation

1 Change User Code, 2 Change Program Code

When you have selected one of these, the PRG light will flash quickly to show that the keypad is ready to accept the new code. Type in the new four-digit numerical code, followed by #. The code will be stored by the keypad, and it will return to the Program Mode menu above, with the PRG light flashing slowly, ready for the next choice.

Note that if you change the program code, you will need to enter the new code in place of 1234 shown above to enter program mode next time.

3 Change Override Time, 4 Change Door Unlocked Time

The factory default times for Door Unlocked and Override are 5 seconds and 15 seconds respectively, and these will probably be suitable for most locations.

The override time should be set long enough for the user to open the door, enter the room and then close the door. If this time is too short, the laser may become tripped out before the door is closed. If this time is longer than necessary, the protection offered by the interlock system is diminished. The Override time can be altered using option 3.

In general, the Door Unlocked time should be quite short, enough for the user to open the door but short enough that the door becomes relocked as soon as it closes. The Door Unlocked time can be altered using option 4.

When you have selected one option 3 or 4, the PRG light will flash quickly to show that the keypad is ready to accept the new activation time for the selected output. Type in the desired time in seconds in the range 1 – 30, followed by #. The time will be stored by the keypad and it will return to the Program Mode menu above, with the PRG light flashing slowly, ready for the next choice.

If you wish to disable the selected output, for example to disable the Door Unlock output because there is no door lock, simply program the selected time to 0 seconds.

If you make an invalid entry, e.g. by entering a time greater than 30 seconds, the keypad will return to the Program Mode menu with the PRG LED flashing slowly and the time value will not be changed.

5 Enter Test Mode

Selecting this option causes the keypad to run its built-in test function. Once 5 has been pressed, the PRG light will flash quickly to show that the keypad is ready to begin the test. Press all the keys once in the following order:

If all is well the Door output will activate for the programmed time period (unless the time has been set to 0), and the Override output will operate. The test verifies that both the normal and backup override timers are working, so the user should check that the override indication on the ICS panel ceases within 50 seconds and the Override indication on the keypad is extinguished after 60 seconds.

If the ICS panel override indication ceases at the same time as the override indicator on the keypad, this should be considered a fault and the keypad may be defective.

Once the test function has completed, the keypad will return to the Program Mode menu above, with the PRG light flashing slowly, ready for the next choice.

Exit and return to normal operation

Once you have finished programming and testing, press 

to return to normal operation.

7 LED Indicators

PWR

The blue ‘PWR’ LED is illuminated when the keypad has power.

PRG

The ‘PRG’ LED will light or flash yellow when the keypad is being programmed.

'DOOR UNLOCKED'

This message illuminates green in the upper black panel when the correct user code has been entered and the Door Unlock output is active. The keypad has an audible alarm which sounds while the door is unlocked.

'OVERRIDE ON'

This message appears in red in the lower black panel when the correct user code has been entered and warns that the interlock is temporarily defeated, allowing the door to be opened without tripping out the laser.

Sounder

An internal sounder will beep to confirm each key press.
It produces a rapid pulsing tone when the Door Unlocked output is active.

8 Operation

The ICS-KP12 is operational when the PWR light is on. For most installations this is either when the ICS mains switch is turned on or when it is armed.

The User Code should only be known to persons with the required training and personal protective equipment who are authorised to enter the controlled area with the laser activated.

To activate the system override and unlock the door, type in the four-digit user code.
The factory default user code is:

Preferably the user code should have been reprogrammed to some new four-digit code, see Programming.

When the correct user code has been entered, the Override On and, if programmed, the Door Unlocked indicators will light, allowing the door to be opened without tripping out the laser.

A continuous sound will be made by the ICS to indicate that the system is overridden. A rapid pulsed sound will be made by the keypad to indicate that the door is unlocked.

After a few seconds the Door Unlocked output will cease so that when the door closes it will become locked.

After a few more seconds the override will cease. If the door is still open when the override stops, the ICS will disable the laser.

An internal door release pushbutton may have been installed. If this is the case, pressing this will cause the keypad to activate the override and unlock the door in the same way it would if the user code had been entered.

8.1 Default Settings

The factory settings are:

Program Code:	1234
User Code:	3333
Door Unlocked Time:	5 seconds
Override Time:	15 seconds

In the event of the Program Code being forgotten, it may be reset back to the factory setting as follows:

Switch off the ICS or power supply to the keypad.

Release the keypad from the wall, see 'Removing the Keypad from the Wall'. The wiring may remain in place.

Fit a shorting link or otherwise apply a connection across the two-pin header J2, refer to the diagram in the Wiring section.

Switch on the power to the keypad for five seconds, then switch off. Note that for newer ICS control panels such as the ICS-6, the system will need to be armed to turn on the keypad power.

Remove the connection across J2.

Refit the keypad to the wall, see 'Attaching the Keypad to the Backplate'.

Switch on the power to the keypad. The Program Code is now reset to the factory default value of 1234.

9 Specifications

Operating Voltage	24VDC
Current Consumption	25mA standby
	150mA activated
Size	160mm wide X 108mm high X 38.5mm deep
Weight	200g

All figures quoted are approximate. Lasermet reserve the right to alter specifications without prior notice.

10 Warranty

Lasermet provide a 12-month warranty for defects in materials and manufacture, from the date of installation or delivery. Installations completed by Lasermet are covered against defects in workmanship for 12 months.

Damage or defects caused by other factors are not covered. For example, industrial contamination, incorrect cleaning, storm damage. Consequential loss is not covered under warranty. Compensation for indirect or direct loss or damage is expressly excluded. Rectification of the defects or a replacement does not initiate a new warranty period.

For all deliveries, payments and other legal transactions, English law takes precedence for any litigation.

11 Contact Details

Lasermet provide a full range of laser interlock equipment including interlock switches, illuminated warning signs, laser shutters, entry keypads with built-in fail-safe override timer, door locks, external power supplies etc. which can be interconnected to provide a complete system. We also supply equipment and consultancy covering all aspects of laser safety. Full support, design, and installation is available from Lasermet, please contact us for any queries.

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