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# Positioning of Pin Entry Devices at the Point of Sale

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## Introduction

With the increased use of pin entry devices (PEDs) at the point of sale, there arises the need to position this new hardware in an intuitive way that is easily accessible by all customers. The PED may incorporate a smart card or magnetic stripe reader.

Experience from countries already using pin entry systems shows that a significant number of people have trouble using these devices at the point of sale. This causes confusion and potential embarrassment for the customer and can have a negative impact on throughput and checkout congestion. Many resort to handing over their PIN information to a friend or stranger in order to pay for goods or obtain cash, and this contravenes conditions of card use.

The PED terminal is yet another piece of technology equipment to be placed on an already congested retail counter. Its placement is crucial to ease of use, and accessible and useable facilities are essential for successful implementation.

## Access and Location

The PED needs to be accessible to as many of the target population as possible. In order to assist the widest possible range of users, and where there is no conflict with merchant conditions of use or security requirements, the PED terminal should be able to be operated in the following ways:

- (a) held easily in one hand;
- (b) operated on a shop counter surface; or
- (c) operated while in a mounting bracket.

The mounting of the PIN entry device should guarantee all users a high level of comfort at the terminal. The standard counter heights on which PEDs are installed may make access difficult for some users, and it should be possible for a staff member to relocate it if necessary, so that it is in comfortable reach of a short or disabled user. The requirements and abilities of the tallest, shortest, able-bodied and disabled members of the population will be very different. It is also recommended that operation of the PED controls should not require tight grasping or twisting of the wrist to manipulate or stabilize it for use.

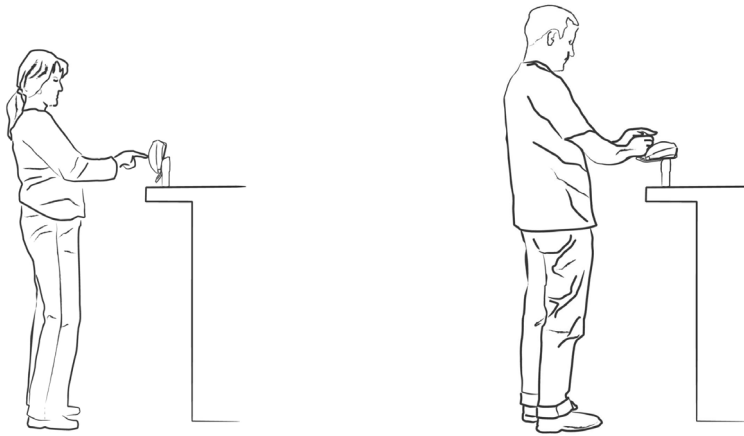
## Placement of the terminal

To ensure that the terminal is in a location that enables users to interact with it comfortably the following voluntary compliance recommendations have been developed.

Installation Location	Recommendation
Minimum height from floor	The centre of the '5' key shall not be below 800mm from floor-level where an operator stands to use the terminal.
Maximum height from floor	The center of the '5' key shall not be above 1250mm from floor-level where an operator stands to use the terminal.
Best location range	Recommended that the pin pad terminal be at a height between 900 and 1000mm.

It is recommended that the relation between the height of the PED and the angle of the display to horizontal follow these guidelines:

Height (mm)	Angle (degrees)
800-900	0-30
900-1100	30-60
1100-1250	60-90



*Counter mounted PED showing angle adjustability for a 5<sup>th</sup> percentile female user and a 95<sup>th</sup> percentile male user*

Furthermore, the PED needs to be mounted such that it is not obstructed by the counter edge and is situated within a user's comfortable reach, not at full arm extension. The forward reach distance of a flexed arm of the smallest British user, a 5<sup>th</sup> percentile female is 403mm. This can be taken as the shortest reach distance for an able bodied user, and thus access to PEDs should not exceed this distance.

Recommendations state that when installed, the '5' key on the PED should not exceed 200mm to the front of the counter, as this restricts a user's ability to get close to the terminal and creates a long reach.

### **Display**

In addition, when the device is mounted in a bracket to promote stability, the display should be tilted correctly to make it easy to read and to avoid any reflection of light. The viewing angle should allow people of different heights to read the display.

### **Disabled Use**

The elderly, and people with disabilities, can face significant barriers in accessing information technology and electronic commerce. This problem risks them becoming marginalized and isolated from the community and has legal implications if they are unable to use such technologies. Many current reviews have highlighted that automatic teller machines and Electronic Funds Transfer at Point Of Sale (EFTPOS/EPOS) facilities are difficult to access for people with limited vision, manual dexterity, memory problems or those who use a wheelchair.

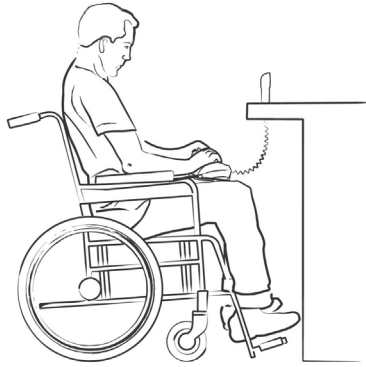
### **Pin Pad Placement Considerations**

People with physical disabilities may not be able to access PEDs or card reader display screens due to their height from the ground, steps leading to counters, reach distances over counters, or other physical barriers. Location and mounting of the PED needs to consider these issues.

To accommodate different users it is necessary, or at least preferable, that the PED be on an adjustable mounting so that it can be viewed and reached from an appropriate and comfortable height and angle.



*Positioning of counter mounted PED for disabled user*



Problems faced with card insertion in the correct orientation are of particular concern to users in wheelchairs, with Parkinson's disease or those that are blind. This can be alleviated by store staff assistance, contactless card technology, and detachable keypads. A keypad detachable from counter mountings that allows wheelchair bound customers to place it on their lap for transactions makes use easier and enables further compliance with disability acts.

*Disabled user with PED detached from mounting*

## Privacy

An important factor in PED location and mounting is that it must afford privacy and security for all users. This can be achieved by placement of shielding around the device, and by enabling the device to be moved or mounted in such a way that a users body screens it from others during use. Privacy issues regarding PIN disclosure are of particular concern to blind and vision-impaired users.

Opaque shielding mounted around the PED and the orientation of the device so that a users body prevents observation ensures privacy. Thus, the mounting of the terminal in relation to the checkout, cash desk or counter is influential in the risk of having a PIN code disclosed. Shielding needs to be mounted such that it doesn't preclude right or left handed users, and remains in position when the device is removed.

## Summary of Mounting Considerations

In order to be accessible to the entire population PED mounting needs to take into consideration the following points:

- Adjustable angle of display and keypad entry surface
- Detachable
- Location – easy reach for clients and staff
- Security – rule out “shoulder-surfing”, placement of shielding, CCTV

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