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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 cash desk, there is a need to position the new hardware in a way that is easily accessible by all customers. The PED (pin entry device) may incorporate a smart card chip or magnetic stripe reader.

Experience from countries already using pin entry systems shows that a large number of people have trouble using these devices at the point of sale. This can cause confusion or embarrassment for the customer and can have a negative effect on customer flow.

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

## Access and Location

The PED needs to be accessible to as many customers as possible. 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 allow all users to operate it comfortably. 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, so 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 recommended that operation of the PED controls should not require a tight grip or twisting of the wrist to move or steady it for use.

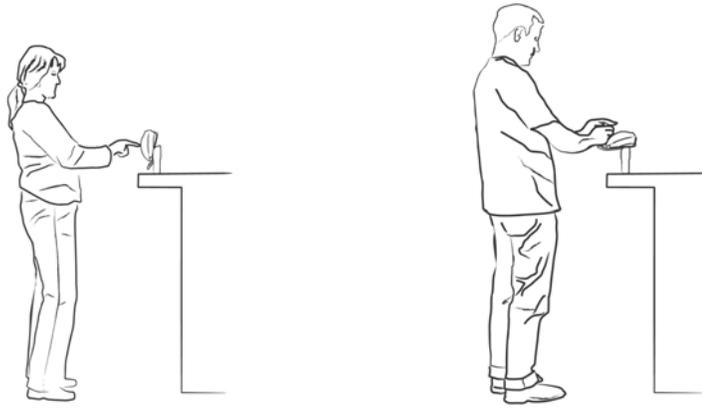
## Placement of the terminal

To ensure that the terminal is in a location that enables users to interact with it comfortably these recommendations have been made:

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.

The PED needs to be mounted so that it is not obstructed by the counter edge and is situated within a user's comfortable reach, not at full arm extension. Users at each extreme of the population, the tallest and shortest, must be considered.

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, EFTPOS and EPOS facilities are difficult to access for people with limited vision, manual dexterity, memory 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 it can be viewed and reached from an appropriate and comfortable height and angle.



Figure 2: Vertical positioning of counter mounted PED for disabled user



Some customers will have particular trouble inserting their card into the terminal, this can be eased by staff assistance, contactless card technology, and detachable keypads. A keypad removable from its mounting, that allows wheelchair users to place it on their lap for transactions makes operation easier, and enables further compliance with disability acts.

Figure 3: Disabled user with PED detached from counter mounting.

## Privacy

An important part of PED location and mounting is that it provides privacy and security for all users. This can be through shielding around the device, and by placing the device so that a users body hides it from others during use. Privacy issues surrounding PIN discovery are of particular concern to blind and vision-impaired users.

A shield around PEDs 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