



Payment Services

Installation and commissioning guidelines for davinci VENDING

Technical specification
Version 2.5

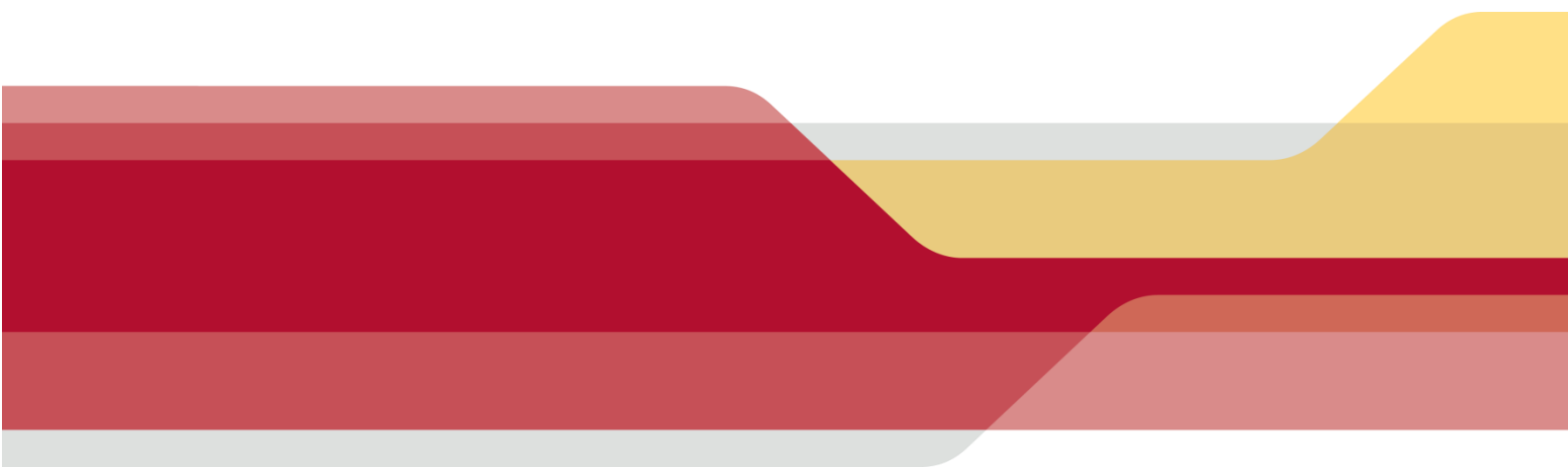


Table of contents

List of abbreviations	3
1 Installation	4
1.1 Machine front cutout measurements	5
1.2 Installation of the VENDING module	6
1.3 Installation of a contact-based motor/insertion reader	7
1.4 Installation of the RFID reader	8
1.5 Power supply concept	9
1.5.1 Connecting the components	10
1.6 PIN allocation of the connections	11
1.7 Grounding	12
1.8 Privacy protection requirements (PCI)	13
1.8.1 Design rules:	15
1.8.2 Design criteria for the privacy protection	16
2 Commissioning a terminal	18
3 Functions menu overview	19
4 Dismantling protection	20
4.1 Display screens	20
4.2 Exchanging the VENDING module	21
4.3 Test commissioning without activation	22
4.4 Mounting instruction	22
5 davinci SAFE	23

List of abbreviations

EMV	Europay MasterCard VISA (card payments) Electromagnetic compatibility (electronic)
ECR	Electronic Cash Register
ep2	eft/pos 2000: CH standard based on the EMV standard in electronic payment traffic
PW	Password
SW	Software
TID	Terminal ID
Trm	Terminal
TRX	Transaction

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1 Installation

The cutout measurements described in this document must be used for the installation of the components in the machine front. The PCI requirements pertaining to privacy protection must be observed when installing the components. Particular attention must be paid to the torque of the screws/nuts; otherwise, correct operation cannot be guaranteed.

Note:

(Applies for all assemblies)

- The machine front in which the contact-based reading is to be installed may not be thicker than max. 4 mm.
- The nuts/screws for fastening all components must be tightened with a torque of 0.8 Nm ($\pm 10\%$). This also applies to the 4 screws that hold the mouthpiece module together.
- The outer 4 screws (attaching the reader to the machine front) may be tightened for the final attachment with a max. torque of 0.3 Nm.
- The PCI requirements for privacy protection are listed in section 1.8.

1.1 Machine front cutout measurements

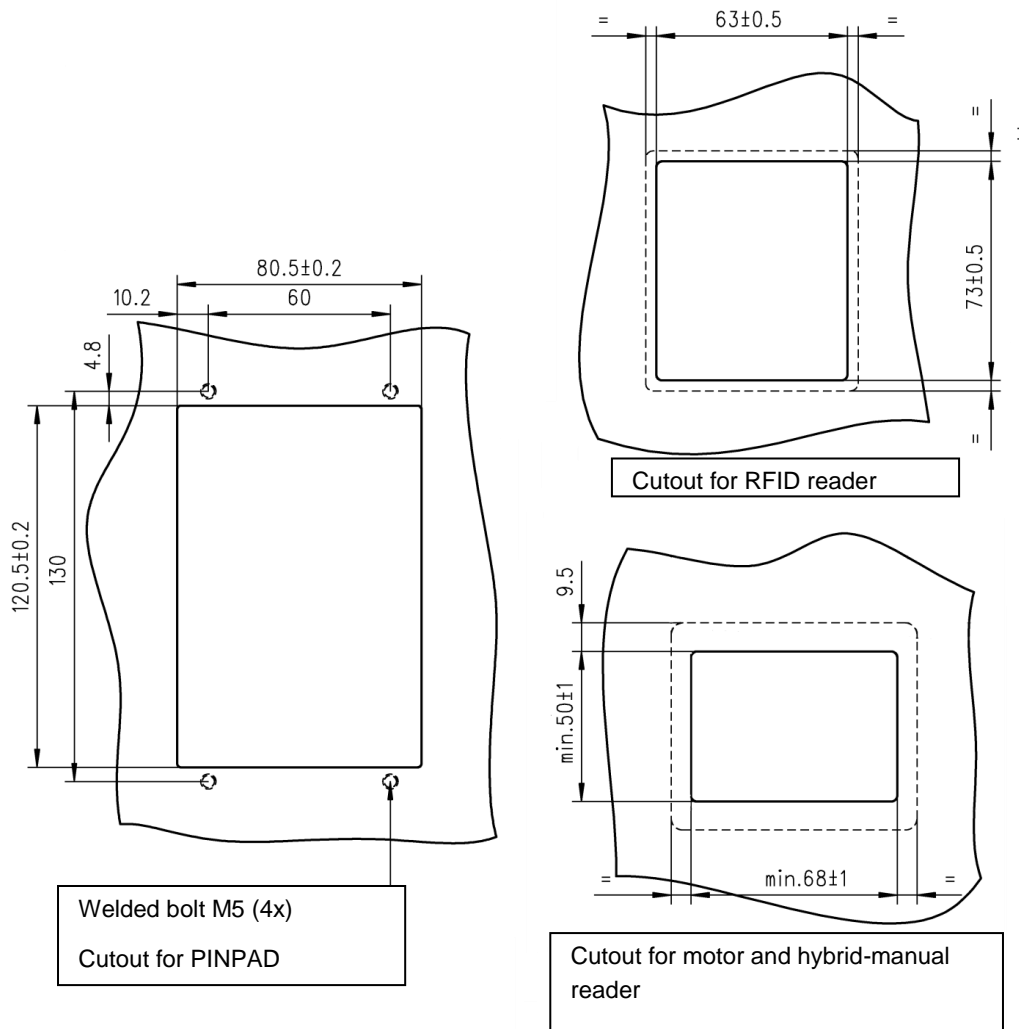


Figure: Cutout from the machine front for the davinci module

1.2 Installation of the VENDING module

The VENDING module is mounted to the front of the machine using the self-locking screws. The appropriate measurements of the machine front cutout and positioning of the mounting bolts are found in section 1.1.

Note:

- When mounting the VENDING module please make sure that it is firmly attached to the machine front; otherwise the dismantling protection could be triggered.
- The seating surface for the dismantling protection switch must be smooth and flat.

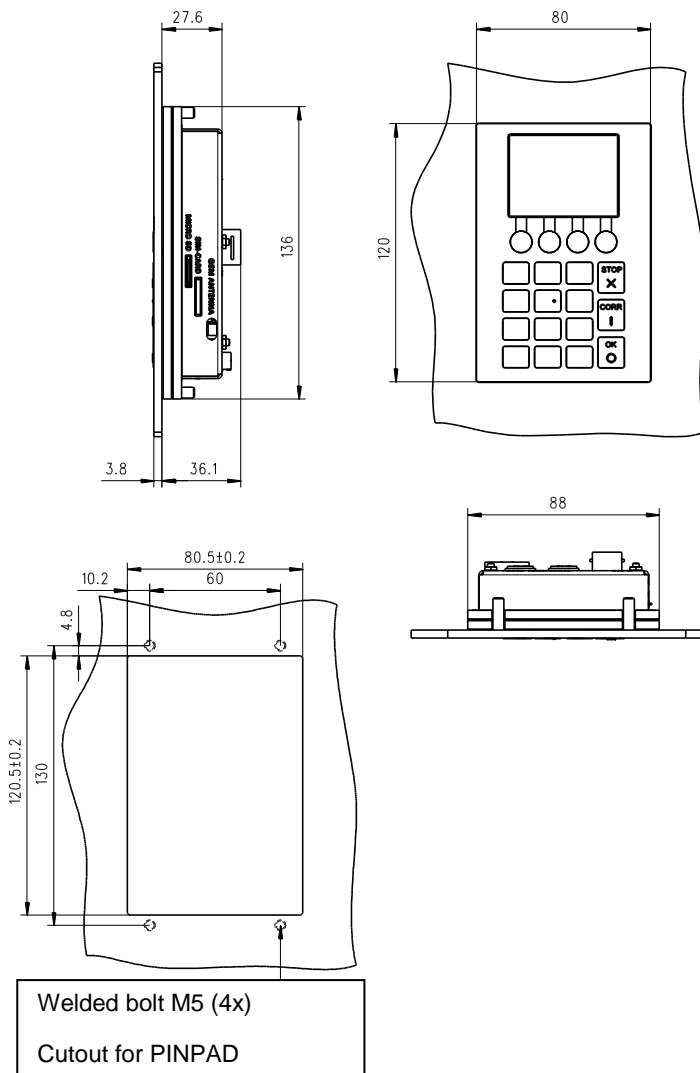


Figure: Borehole measurements for the davinci module

1.3 Installation of a contact-based motor/insertion reader

The two davinci VENDING contact-based card readers include a motor reader with a shutter and a hybrid insertion reader. The installation of this type of reader is described using a motor reader as an example. An insertion reader can be installed the same way.

First the mouthpiece and the supporting plate are attached to the machine front. Water drainage channels are built into the supporting plate, as are the bolts for attaching the motor reader. These will be attached in a second step using self-locking nuts. The mouthpiece is attached to the housing using the outer fastening screws.

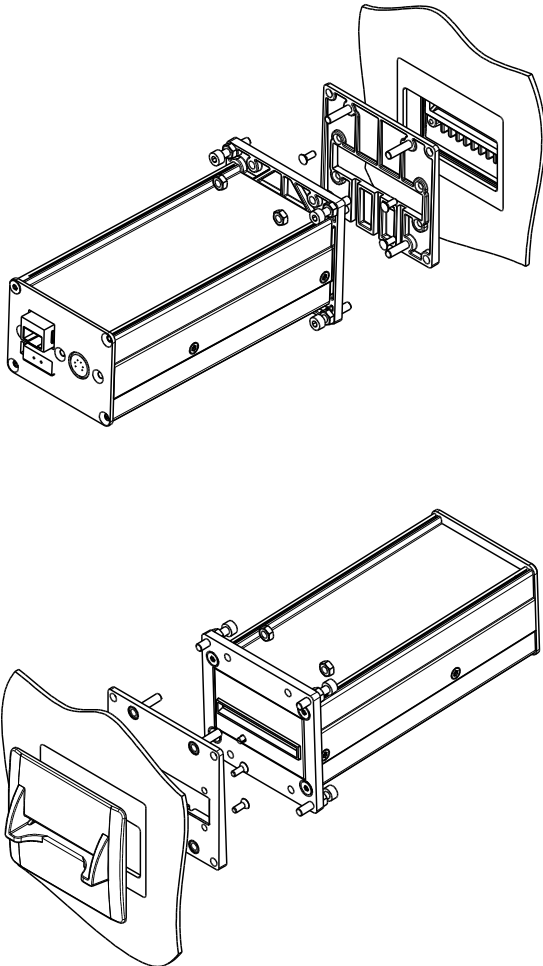


Figure: Motor reader installation

1.4 Installation of the RFID reader

The RFID reader is attached to the machine front using the fastening screws.

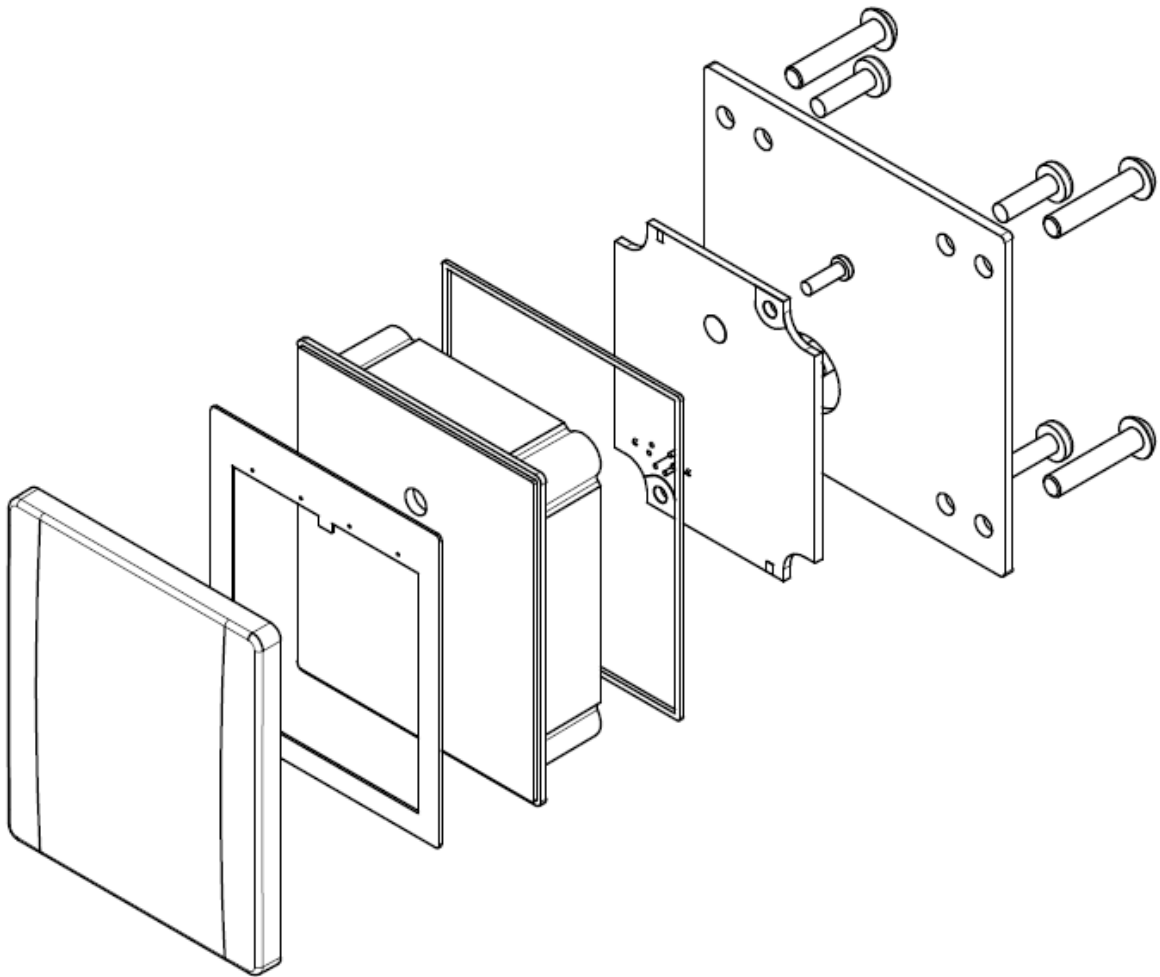
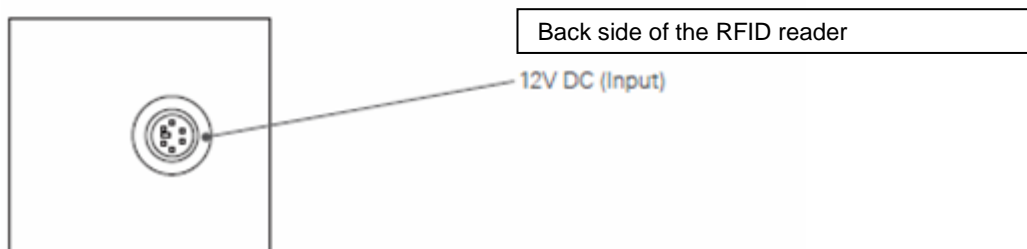
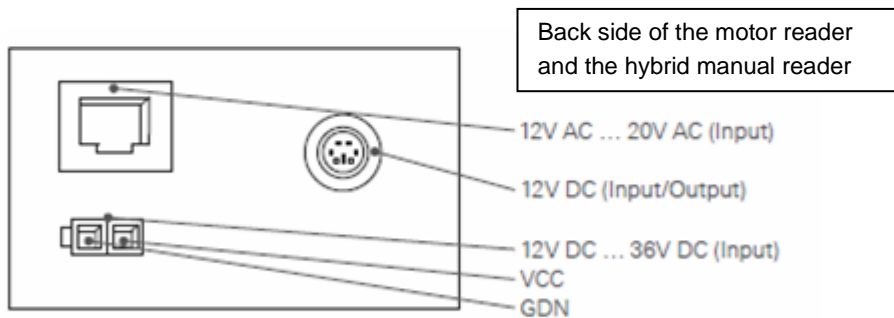
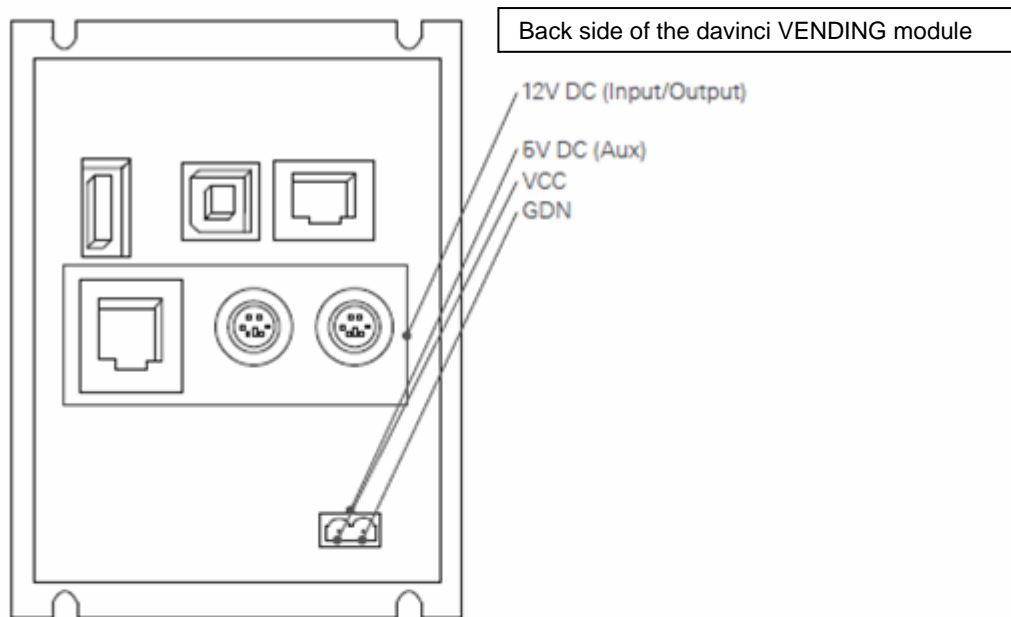


Figure: Installation of the RFID reader

1.5 Power supply concept

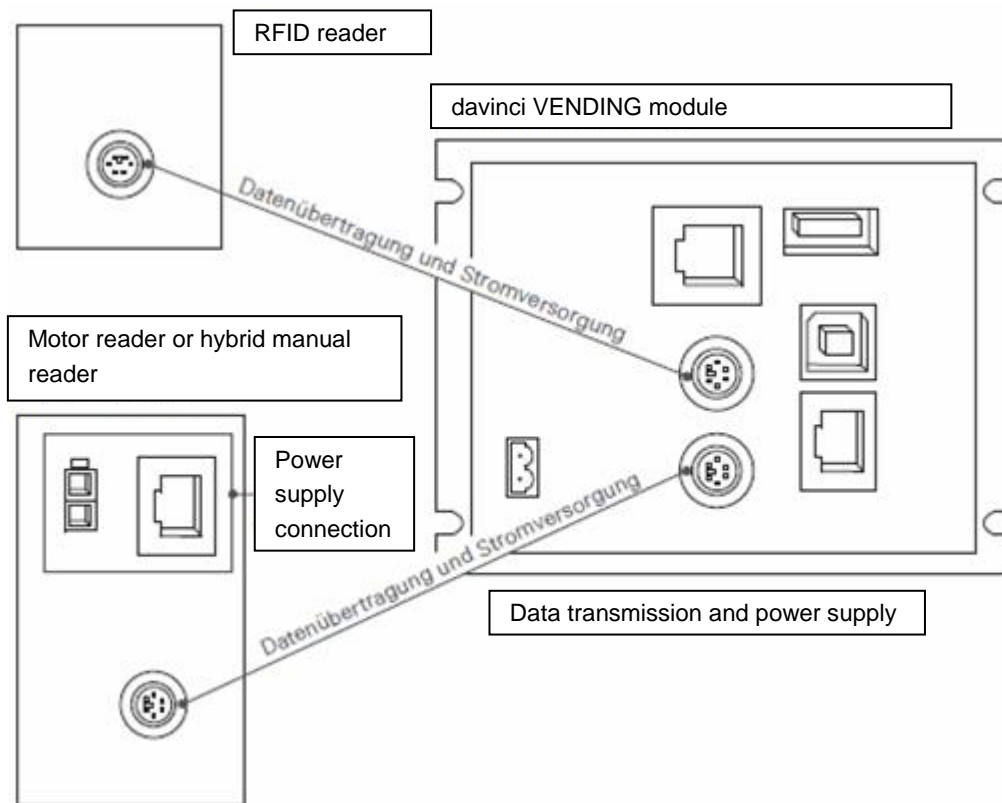
The davinci VENDING module's power supply concept is designed to be diverse in order to meet a range of customer requirements. Power to the davinci VENDING module can be supplied through a motor reader, hybrid manual reader, a power adapter or a vending machine. Power can also be supplied to other components in these instances along with the davinci VENDING modules.



1.5.1 Connecting the components

Connecting the components is described in this section. The maximum length of the connecting cable between the reader and the davinci VENDING module is two meters. Only the cable specified by SIX Payment Services may be used.

In this example, the davinci VENDING module is combined with an RFID reader and a motor reader. The connected motor reader may, or may not, be equipped with a shutter. Power is supplied to the entire system through the motor reader's power supply connection. A hybrid manual reader can also be connected instead of a motor reader.



1.6 PIN allocation of the connections

PIN allocation for the davinci VENDING module

Description	Plug type	Purpose	1	2	3	4	5	6	7	8
Power	screw/plug connection	5V DC power supply (auxiliary)	VCC	GND						
Comm.	RJ45	Ethernet	Tx+	Tx-	Rx+			Rx-		
ECR	RJ12	Cash register interface	U in Ext +12V	U in Ext +12V	RxD	TxD	GND	GND		
USB type 1.1	Standard type A Standard type B	Host and device	+ 5V	D-	D+	GND				
Connect to module	mini-DIN 6-pol.	Connection to the components	+12V	+12V	RxD	TxD	GND	GND		
Connect to module	mini-DIN 6-pol.	Connection to the components	+12V	+12V	RxD	TxD	GND	GND		

PIN allocation for the card reader

Description	Plug type	Purpose	1	2	3	4	5	6	7	8
Power	Molex	12V-36V DC	GND	VCC						
Power	RJ45	12V-20V AC	AC1	AC1	AC1			AC2	AC2	AC2
Connect to module	mini-DIN 6-pol.	Connection to the components	+12V	+12V	RxD	TxD	GND	GND		

PIN allocation for the RFID reader

Description	Plug type	Purpose	1	2	3	4	5	6	7	8
Connect to module	mini-DIN 6-pol.	Connection to the components	+12V	+12V	RxD	TxD	GND	GND		

Grounding

Proper grounding must be ensured between the davinci VENDING module and the reader (hybrid manual reader or motor reader).

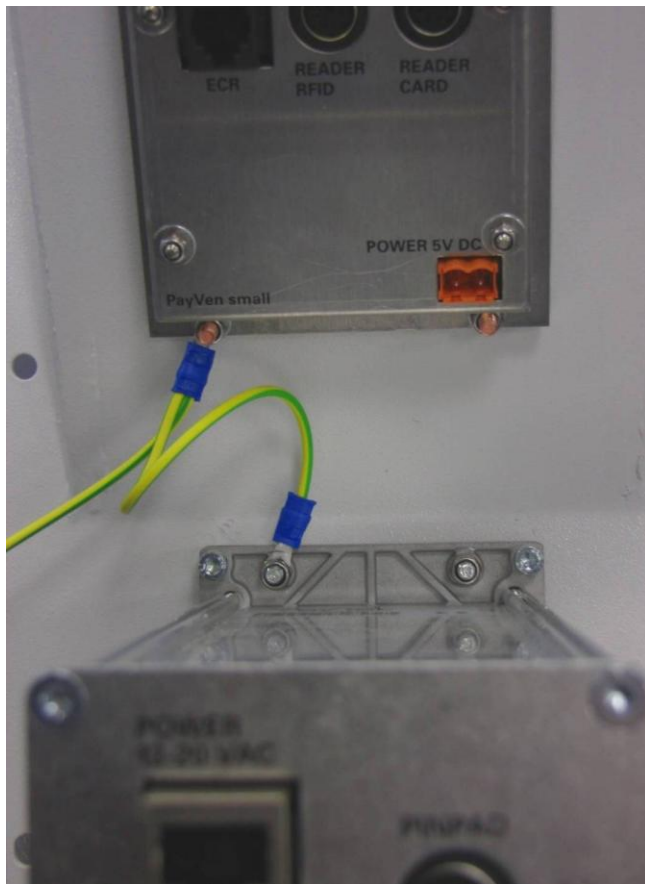
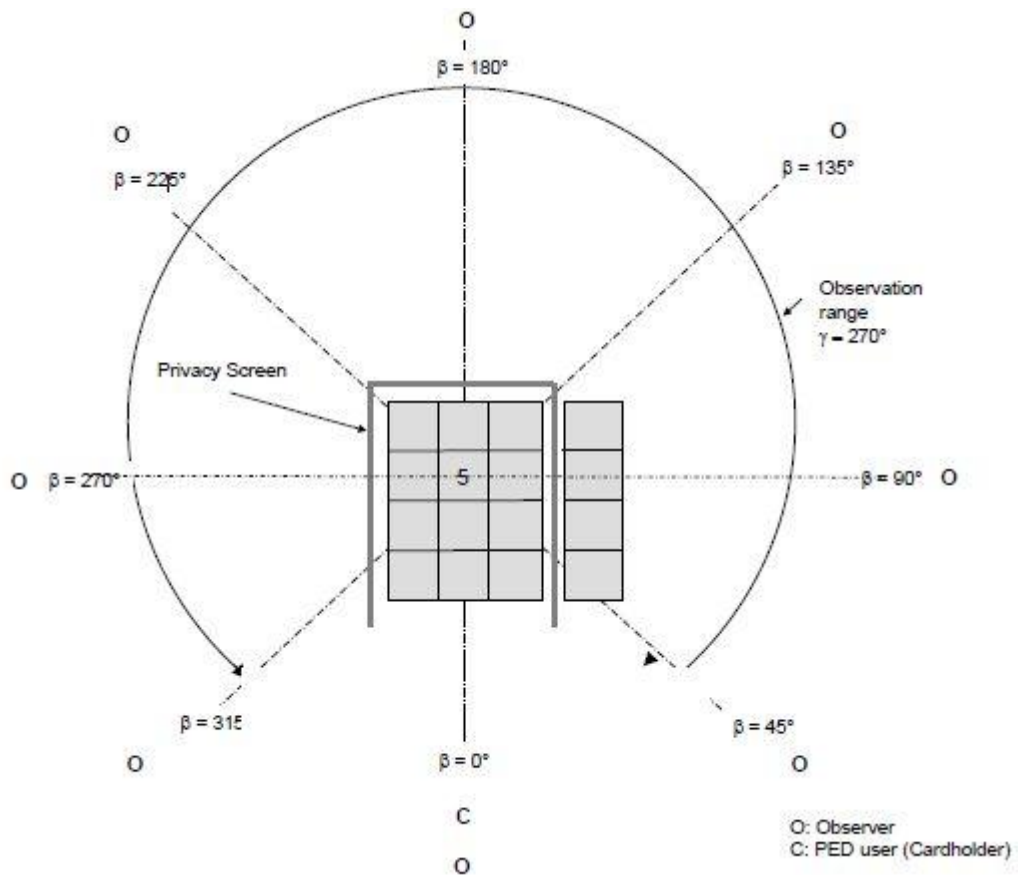


Figure: Grounding example

1.7 Privacy protection requirements (PCI)

The following figures serve as examples for terminals featuring integrated privacy protection that meets the PCI security requirements for unattended payment terminals. Other implementations must also be permitted under certain circumstances.



Example of an unattended payment terminal with privacy protection zone, top view

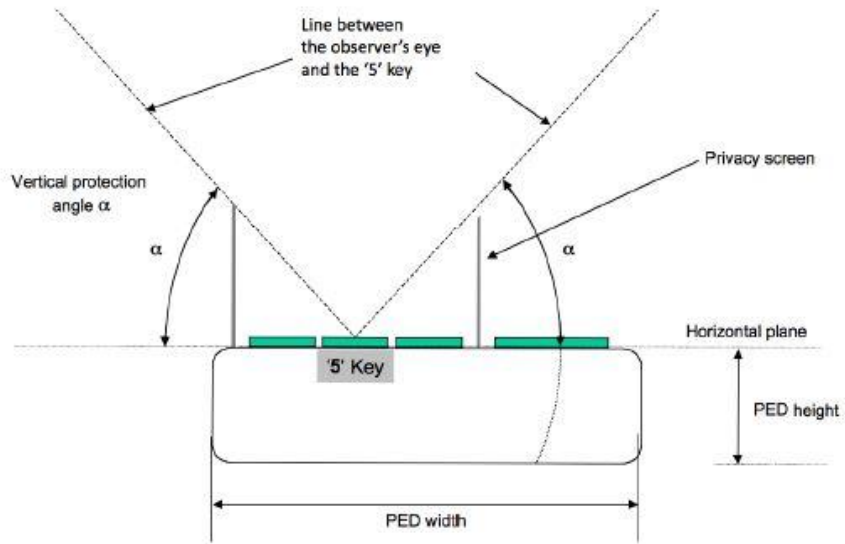


Figure A5: Sample device, front side view

Sample keypad field of an unattended payment terminal, cross section

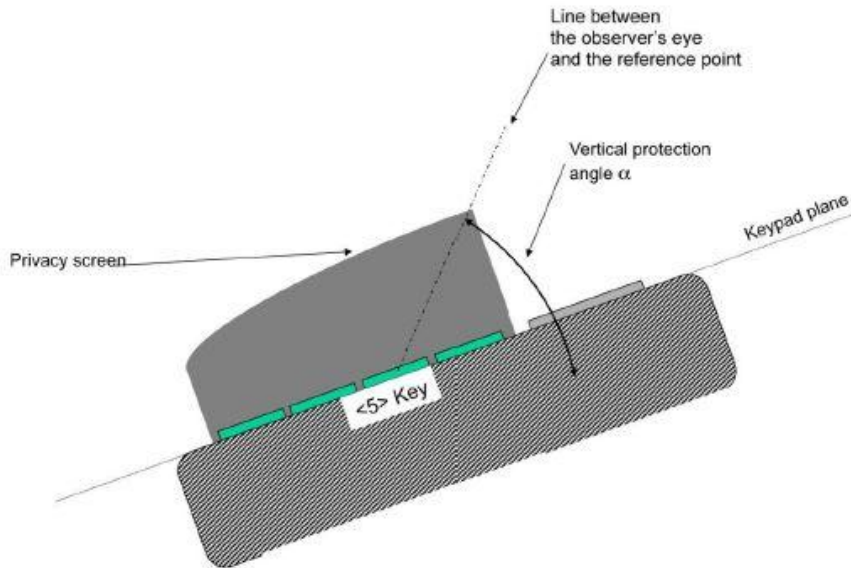


Figure A6: Sample device, side view

Sample keypad field of an unattended payment terminal, side view

1.7.1 Design rules:

These definitions apply for a privacy screen that is integrated as a design feature in an unattended payment terminal. It can be provided as part of the keypad or through the casing of the unattended payment terminal. The rules and diagrams listed above are guidelines that can also be replaced by other means with at least the same degree of efficiency.

The keypad reference center is the column line in the middle of the keypad, in the row containing the 5 key.

The privacy screen should offer the following shielding angles:

Horizontal angle β	Comment	Vertical angle α
$315^\circ \leq \beta \leq 45^\circ$:	Within this range of β the cardholder deters an observer with her/his body.	N/A
$45^\circ \leq \beta \leq 90^\circ$ $270^\circ \leq \beta \leq 315^\circ$:	Within these ranges visual observation of the keypad is partially blocked by the cardholder. The protection angle α shall be at least 35° . Please note that the front end of the privacy screen must be higher if the PED is tilted.	$\alpha \geq 35^\circ$
$90^\circ \leq \beta \leq 270^\circ$:	The protection angle shall be at least 40° . The display side of the privacy screen may be lowered as the PED is tilted against the horizontal plane.	$\alpha \geq 40^\circ$

The protection is based on the angle of observation and includes no specific technical installations, such as structural screens.

1.7.2 Design criteria for the privacy protection

The following measures can be used to ensure an effective screening of the keypad during PIN entry. These measures are generally combined; in some cases only a single measure is used alone.

Note:

These options do not preclude the use of privacy protection measures as defined in A1; however, they do permit less restrictive structural measures, e.g. $\geq 20^\circ$.

Positioning of the terminal on the checkout stand in a manner that makes observation of the PIN entry process impossible. Examples include:

- Privacy screens at the checkout counter. The privacy screens can be intended solely for screening purposes or can be part of the general design of the checkout counter, e.g. function as sales space.
- Positioning of the unattended payment terminal so that spying out of the PIN entry is hindered due to the angle. Fold-up (temporary) privacy protection that is attached to the installation site of the unattended payment terminal. Customers (according to instructions and requirements) or merchants can turn the privacy protection during the PIN entry sideways and/or to tip it forwards/backward to hinder observation of the PIN entry with an adjustable device installed at the unattended payment terminal. Positioning of surveillance cameras on site so that the keypad for PIN entry cannot be seen.

Instructing the cardholder in regard to secure PIN entry. This can take place through a combination of the following measures:

- Signage at the unattended payment terminal;
- User guidance on the display, potentially with a screen to click;
- Printed information at the point of sale, and
- application of a logo for secure PIN entry.

Other measures are also possible. Listed above are examples of measures that a supplier can suggest to protect PINs during PIN entry. The supplier must provide appropriate procedures in the documentation for the unattended payment terminal, including a table that shows which procedures should be used in order to provide protection against specific observation corridors.

The following is an example of such a table:

Method	Observation corridors				
	Cashier	Customers in queue	Customers elsewhere	On-site cameras	Remote cameras
UPR Stand A	M	H	L	L	L
UPR Stand B	H	H	H	L	M
Checkout counter A	L	M	M	L	H
Checkout counter B	H	H	M	H	H
customer instruction	H*	H*	H*	H*	H*

Sample table for observation corridors and PIN protection measures

* Measures for customer instruction are hardly repeatable and should therefore be combined with other measures.

N = low, M = medium, H = high

The table must show the purchaser of the unattended payment terminal which methods he can use to protect the customers' PINs. To be noted when choosing suitable measures, is that sufficient protection is ensured from all observation corridors.

2 Commissioning a terminal

Once the terminal has been properly installed, it must be activated and placed in operation with the appropriate parameters.

Note:

If the davinci VENDING module's communication takes place through the vending machine, the operation of the terminal may differ from these instructions.

During the following steps, any necessary entry selections can also be made using the arrow button and confirmed with the 'OK' button.

ECR Integration? YES NO	Cash register-integrated installations Stand-alone installations
ECR Connection RS.232 LAN USB	Connection to cash register via RS.232 Connection to cash register via LAN Connection to cash register via USB
ECR PORT Speed 115200 57600 38400	Interface speed
Network Interface LAN ECR	Terminal connection directly through LAN Terminal connection via cash register/vending machine
IP Configuration DHCP Static IP	Obtains IP address from DHCP server and displays it -> next with OK Must be entered properly and prepared with the activation
Server IP-Adress serv.ep2.telekurs.com	Default DNS address for Internet communication Other communication types (private net, point-to-point) must be entered manually and confirmed with 'OK'.
Server TCP Port Nummer 8953	This input can be confirmed with 'OK'
Terminal Identifikation	Enter the specific terminal ID here and confirm with 'OK'

After the terminal ID is entered, the terminal starts the software download, configuration and initialization.

The terminal is operationally ready as soon as the word "Welcome" and the card brands appear on the screen.

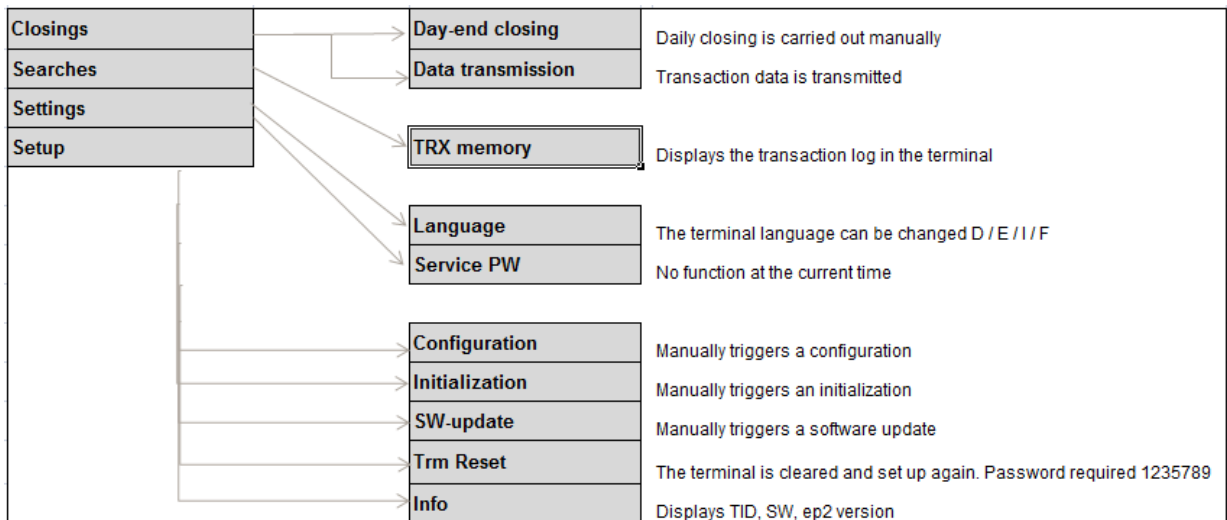
3 Functions menu overview

The terminal must first be approved by vending machines in order to be able to select these functions.

(MPD command: 4 - 1 Activate the service menu on the terminal)

Once activated, the terminal password must be entered. Each terminal has a password that is defined according to customer preference during activation.

The following menu structures can be selected with the arrow button and confirmed with the 'OK' button. The STOP button can be used to jump back a level.



Hardware test menu

This hardware test menu is reached as follows: After a power-up, the MENU button must be pressed while the white screen is being built. Entry of the "Z" password is then required.

Menu items:

- | | |
|----------------------------|---|
| 1. Test PINpad | Each button must be pressed once, otherwise you cannot proceed. |
| 2. Test external reader | The card is read 10 times |
| 3. List installed firmware | List of the installed SW modules |
| 4. Exit | Abort |

4 Dismantling protection

In compliance with the international PCI rules, the individual components of the davinci VENDING terminal are equipped with dismantling protection. Components dismantled in the field must therefore always be returned to SIX Payment Services to be reactivated.

4.1 Display screens

The dismantling protection consists of electronic contacts that can be found at the front of the device and can only be activated through correct assembly of the components. Although the dismantling protection of one component is active, you can take a reading from the status indicator on the display:

Display	Description	Assistance
Tampered (0) Tampered (2)	<ul style="list-style-type: none"> The security of the VENDING module was activated or damaged 	<ul style="list-style-type: none"> Send VENDING module back to SIX Payment Services
Reader Tampered (0) Reader Tampered (2)	<ul style="list-style-type: none"> The security of the reader was activated or damaged 	<ul style="list-style-type: none"> Send reader back to SIX Payment Services
Not mounted (4)	<ul style="list-style-type: none"> The VENDING module is not correctly mounted 	<ul style="list-style-type: none"> Check contacts on the dismantling protection Activation possible after correct assembly
Reader not mounted (4)	<ul style="list-style-type: none"> The reader is not correctly mounted The mouthpiece is not correctly mounted 	<ul style="list-style-type: none"> Activation possible after correct assembly Possibly check contacts on the dismantling protection or the assembly of the mouthpiece
Not activated (5)	<ul style="list-style-type: none"> The dismantling protection of the VENDING module is not active 	<ul style="list-style-type: none"> Activate
Reader not activated (5)	<ul style="list-style-type: none"> The dismantling protection of the reader has not yet been activated 	<ul style="list-style-type: none"> Activate
Not mounted (7)	<ul style="list-style-type: none"> The VENDING module is not correctly mounted The VENDING module has been removed 	<ul style="list-style-type: none"> Device must be sent back to SIX Payment Services for reactivation

Reader not mounted (7)	<ul style="list-style-type: none"> • The reader is not correctly mounted • The reader has been removed • The mouthpiece is not correctly mounted 	<ul style="list-style-type: none"> • Device must be sent back to SIX Payment Services for reactivation
Not activated (8)	<ul style="list-style-type: none"> • The dismantling protection of the VENDING module is closed again. A password is necessary to reactivate it • No transactions are possible in this state 	<ul style="list-style-type: none"> • Device must be sent back to SIX Payment Services for reactivation
Reader not activated (8)	<ul style="list-style-type: none"> • The dismantling protection of the reader is closed again. • A password is necessary to reactivate it • No transactions are possible In this state 	<ul style="list-style-type: none"> • Device must be sent back to SIX Payment Services for reactivation

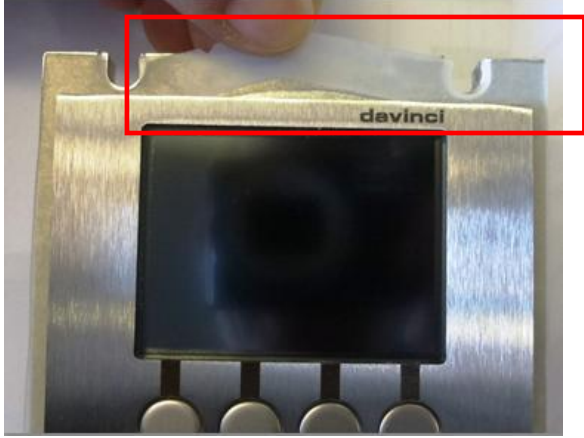



4.2 Exchanging the VENDING module

When exchanging the VENDING module, it is to be noted that the card reader must also be exchanged. Otherwise, it will no longer be technically possible to conduct "plain text" PIN verifications against chip cards which have an SDA chip (static data authentication). Under certain circumstances, they would then no longer function properly. → The CH Maestro card is not affected by this.

4.3 Test commissioning without activation

During a menu query pertaining to the activation, the STOP button can be used to abort the activation and subsequent entry of the Z password. In this way, the status of the dismantling protection is not queried or changed. The terminal can be placed in operation and, for example, initialized in this mode. → Important: No transactions can be conducted in this mode. After powering up again, the same "Activation menu" appears.

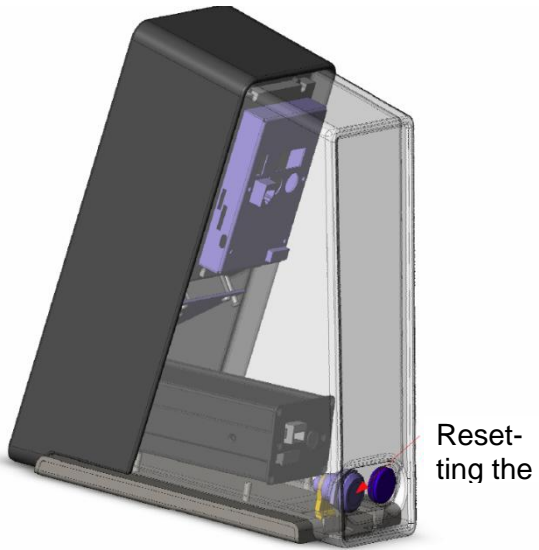
4.4 Help with assembly

<ul style="list-style-type: none"> • If the silicon seal is not correctly mounted, the device must be sent back. 	
<ul style="list-style-type: none"> • Once the silicon seal is correctly mounted, the device is waterproof and can be mounted 	
<ul style="list-style-type: none"> • The flex is very sensitive and may not be bent and touched. 	
<ul style="list-style-type: none"> • There maybe no gap between the card reader and the mouthpiece 	

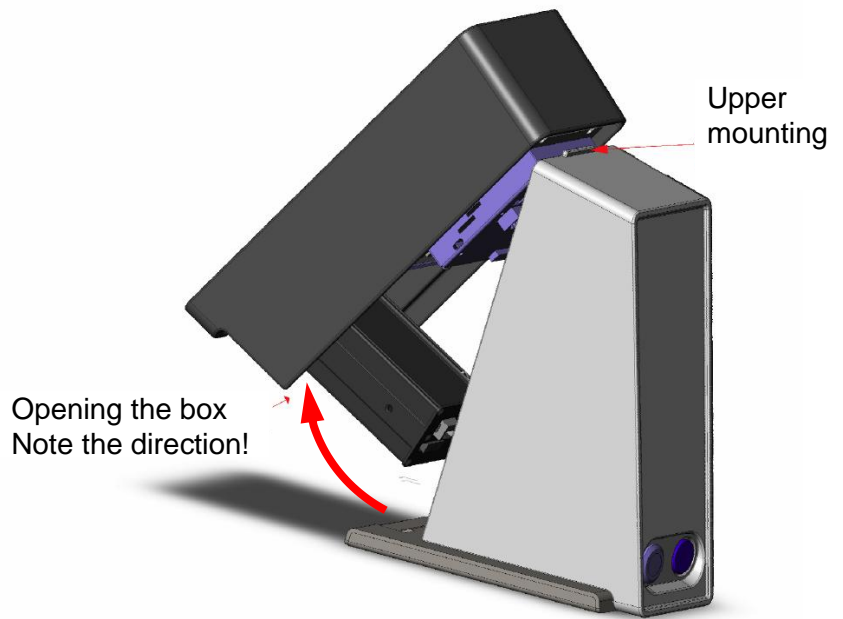
5 Davinci SAFE

Mounting instruction davinci II SAFE

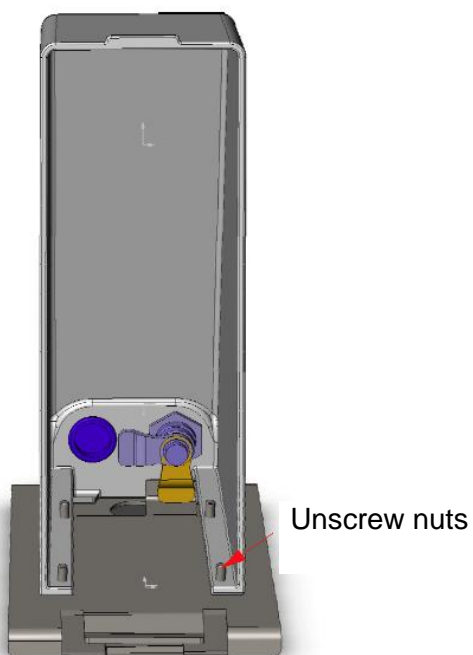
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