PAYMENT

Mechanical Installation / Electrical Installation

cVEND touch S

PIN-Pad
Integrated NFC Unit

M40921-0e-PY-B

Note

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Content

1 About these instructions

These instructions describe the mechanical and electrical installation of the cVEND touch S.
The instructions are intended both for developers who want to integrate the payment terminal into the vending machine and for trained service staff who are tasked with operating and/or maintaining the cVEND touch S.

1.1 Applicable documents

The following documents must be observed for the planning, installation and operation of the payment terminal.

	Document	Document No.
1	cVEND touch Security Policy	cVEND-touch-security-policity-03.03

Tab 1: Applicable documents

2 Safety Instructions

- ► The device may only be used for the intended purpose designed for by the manufacturer.
- ► The operation manual should be conveniently kept available at all times for each user.
- ► Unauthorized changes and the use of spare parts and additional devices which have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.
- ► The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- ► Repairs may only be executed by the manufacturer.
- ► Installation, operation, and maintenance procedures should only be carried out by qualified personnel.
- ► Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.
- ► When working on devices the valid safety regulations must be observed.
- ► Special advice for carriers of cardiac pacemakers:

  Although this device does not exceed the valid limits for electromagnetic fields you should keep a minimum distance of 25 cm between the device and your cardiac pacemaker and not stay in an immediate proximity of the device respective the antenna for some time.

⚠ Important:

- Do not damage the device
- The device must not be used or stored outside the specified ambient temperature
- Avoid short-circuiting the device
- The device contains a battery-powered safety circuit. The safety circuit is triggered if safety-relevant parts are dismantled. In this case, the device stops normal operation and can only be reactivated by the manufacturer in a certified safe environment.
- If a tampering attempt is detected, the terminal deletes all key material.
  (see chapter 9 Protection against manipulation

3 Product use

The cVEND touch S payment terminal combines contactless payment and PIN entry in a single device.

- Suitable for indoor and outdoor use
- Can be used in various vending machines and applications
- Barrier free use

4 Scope of delivery

The scope of delivery of the cVEND touch S consists of:

- cVEND touch S terminal
- Housing seal (Rubber seal)

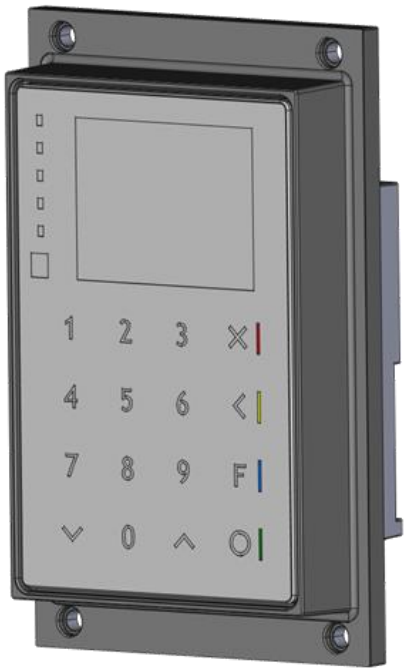


Fig 1: cVEND touch S

Fig 2: Housing seal

5 Front- and Rear view

5.1 Front view

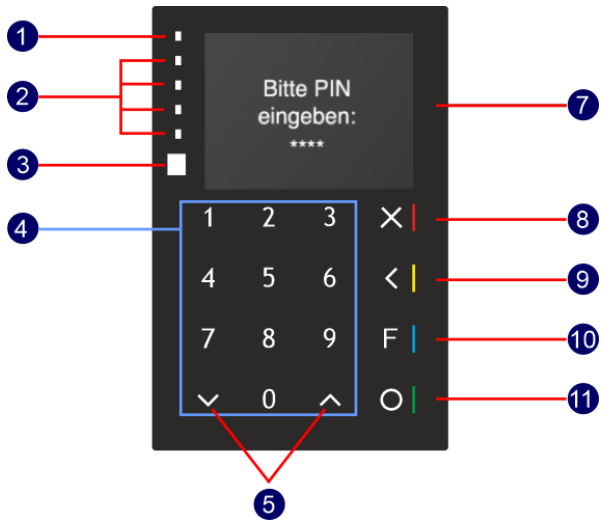


Fig 3: Touch Panel with No-block

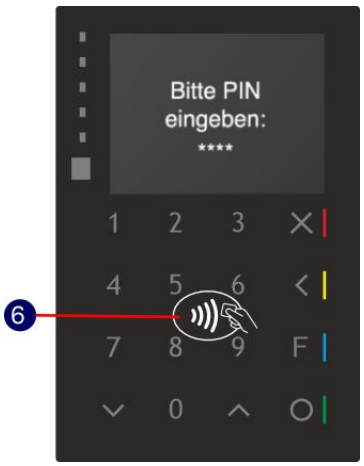


Fig 4: Touch-Panel with „EMVCo-Logo“

No.	Front-Elements	Discription
1	Brightness sensor	The sensor detects the brightness in the surroundings.
2	LEDs (4x green)	4 Green LEDs to indicate the progress of the transaction
3	Camera	Scanning and decoding barcodes from customer applications
4	Keypad	Input box for operation and for entering a PIN
5	Arrow keys up/down	Navigation menu
6	Contactless logo	Request to hold a contactless payment card
7	Display	Display for user guidance
8	✕	Termination of process
9	<	Correction
10	F	Function
11	○	Confirmation

Tab 2: Description Touch Panel

5.2 Rear view

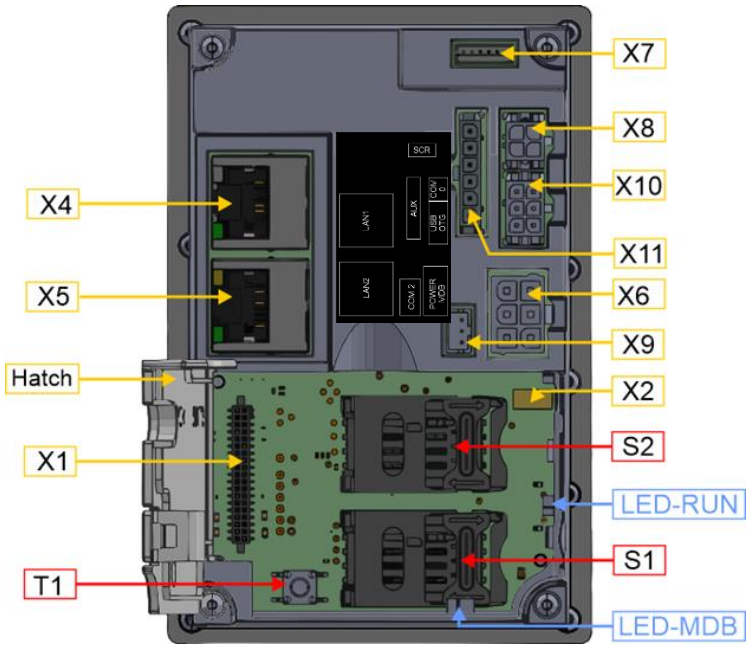


Fig 5: cVend touch rear view

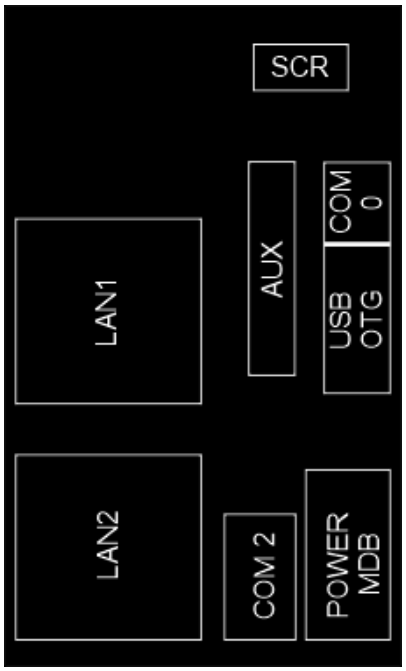


Fig 6: Label

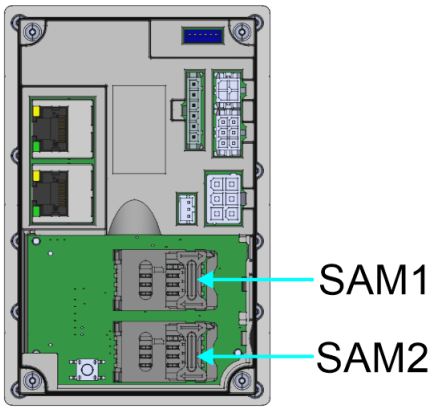
Label	Terminal name	Description
X1	EXT	Slot for optional expansion modules
X2	Spring contact	Spring contact for EXT
X3	-	Not assigned
X4	LAN 1	LAN-/Ethernet Schnittstelle (10/100 Base-T)
X5	LAN 2	
X6	POWER / MDB	Power Supply and MBD-Interface
X7	SCR	-
X8	COM 0	RS232 V.24 (UART#1) Interface
X9	COM 2	RS232 V.24 (UART#2) Serial Debug Port
X10	USB OTG	USB OTG Interface (USB Device oder USB-Host)
X11	AUX	Digitale Ein- und Ausgänge / Audio-Ausgang (AUX)
S1	SAM 1	SAM Slots
S2	SAM 2	
T1	Push Button	Service Button
LED	LED RUN	Operating status indication CPU
LED	LED-MDB	Operating status indication MDB interface

Tab 3: Description of the interfaces

5.3 S1 / S2 SAM Sockets

Up to two SAM cards can be used as an option.

The sockets are located under the hatch on the back of the device.



Open the flap on the back of the device	
①	Slightly lift the cover over the SAM card slot at the end and slide it to the left
②	Fold the cover of the SAM card socket upwards to open it and insert the SAM memory card into the socket.
③	Close the cover Slide the cover to the right until it clicks into place
Ready to use!	

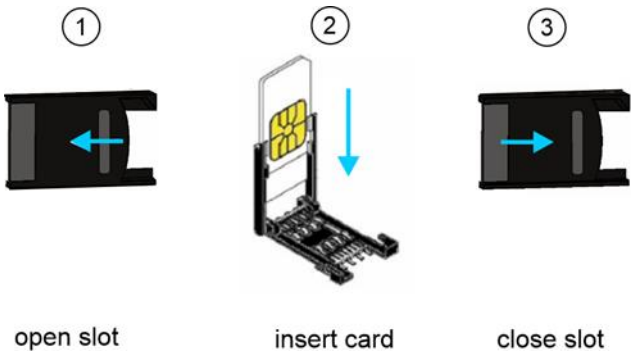


Fig 7: SAM sockets S1/S2

6 Mechanical Installation

6.1 Assembly steps

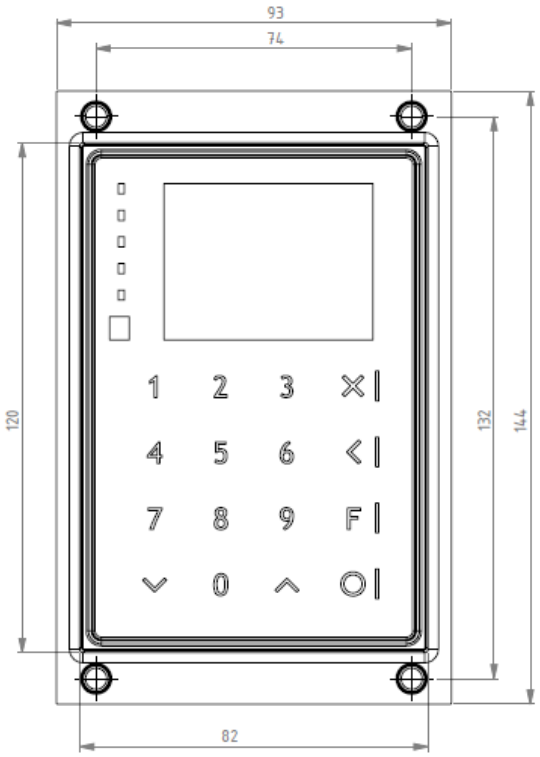
- Note the installation location:
  The installation location must be selected so that direct sunlight is avoided.
  The directly irradiated power should not exceed 700 W/m".
  Prolonged exposure to direct sunlight can lead to temporary discoloration or permanent damage to the display.
- The material thickness of the vending machine front should be between 2 mm and 3 mm.
- The surface of the vending machine front must be clean and even before installation.
- The housing seal must be placed over the display to prevent humidity.
- The mounting and sealing of the reader on the vending machine is carried out by the manufacturer.

NOTE:

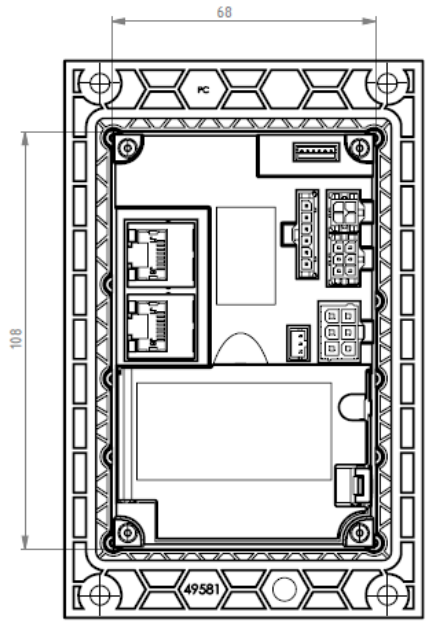
Both when installing and removing the terminal, recommissioning is always necessary.

6.2 Dimension

Front view



Rear view



Side view

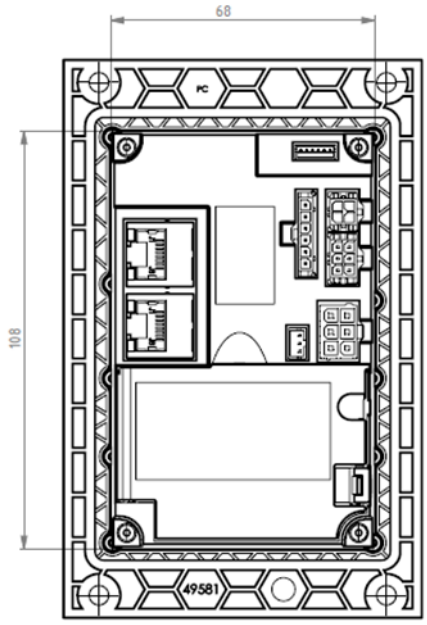


Fig 8: Dimensions

6.3 Drilling template

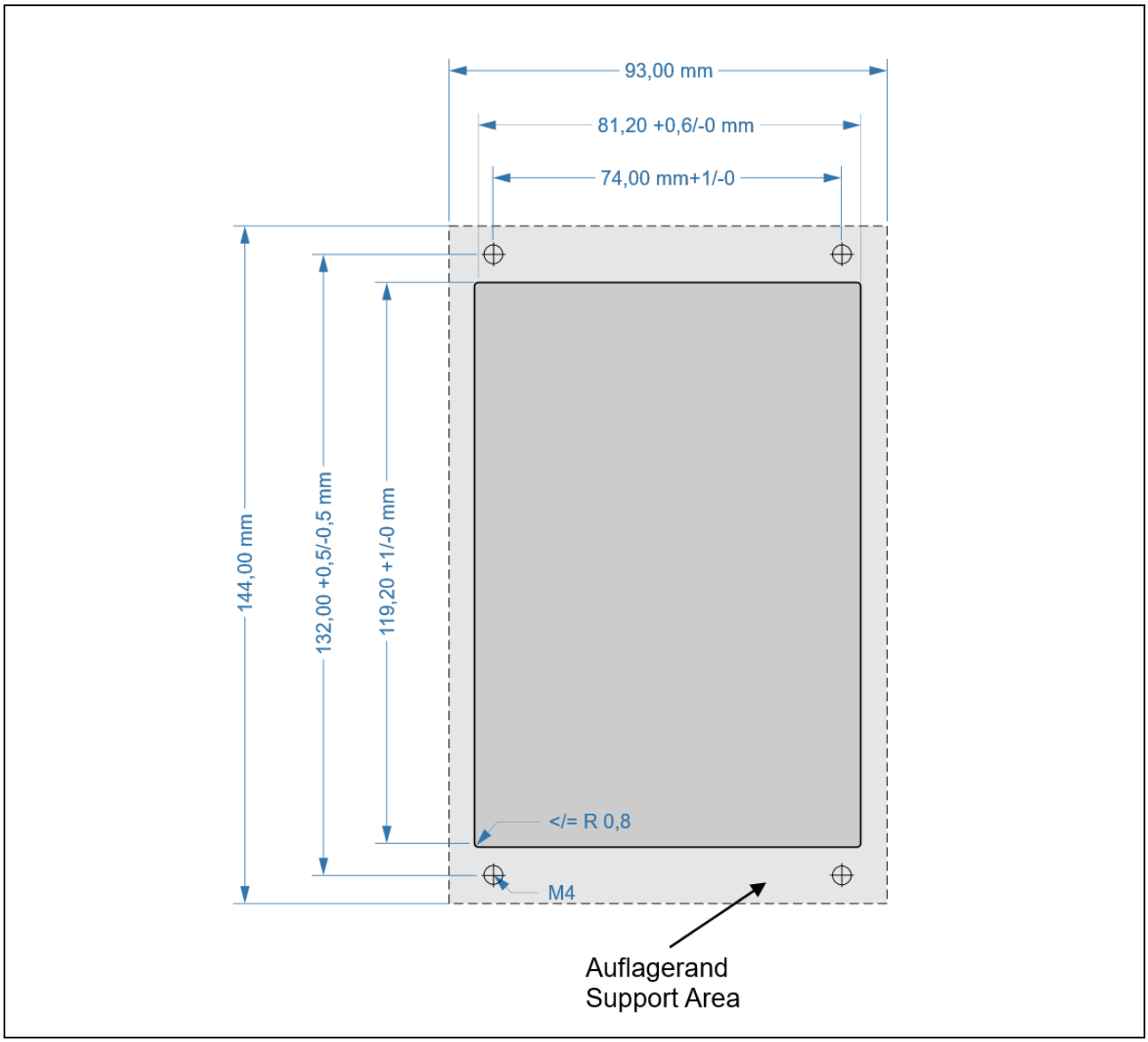


Fig 9: Drilling template

- Cut-out for the vending machine front (W x L): 82 x 120 mm
- There are 4 threaded bolts (M4 x 12) on the inside of the front of the vending machine
- Slide the cVEND touch S from the rear of the vending machine onto the 4 threaded bolts and fasten with 4 x M4 nuts. tightening torque = 2.5 Nm
- - Electrical connections
  „electrical Installation
  (M40920-0e-PY-B)
- Remove the protective film from the device

6.4 Installation Housing Seal

① The housing seal included in the scope of delivery is pushed over the front of the cVEND touch S.

② In the next step, the cVEND touch S is pushed from the rear of the vending machine onto the 4 threaded bolts and secured with 4 nuts (M4x12).

This places the housing seal between the reader and the vending machine housing, preventing moisture from penetrating.

Tightening torque of the nuts = 2.5 Nm

Housing Seal

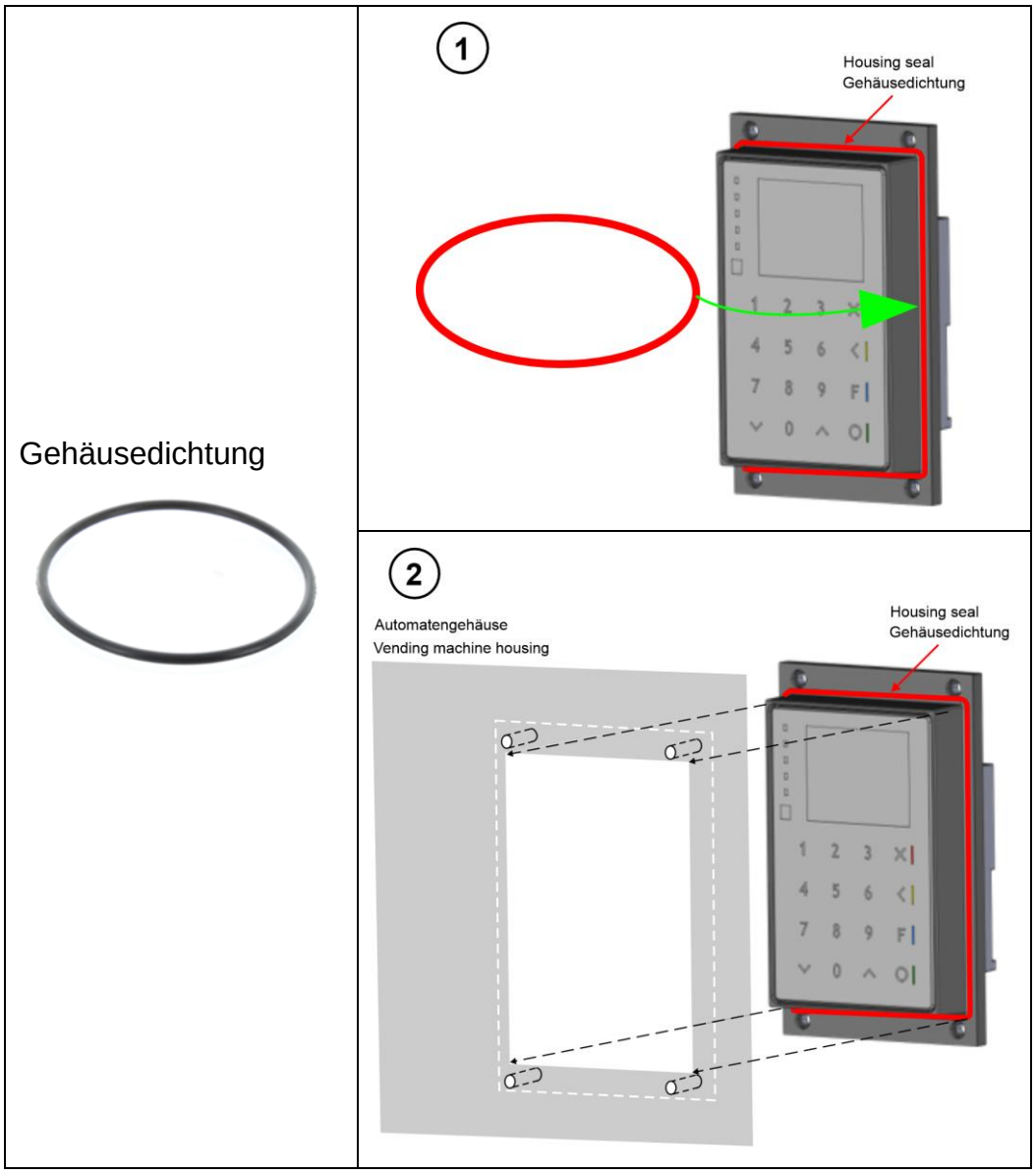


Fig 10: Installation Housing Seal

6.5 Cable routing to dissipate condensation moisture

- Laying the cables in a U-shape makes it more difficult for condensation to penetrate the interior of the terminal.
- The electrical connection of the reader is carried out in 7 Electrical connections.

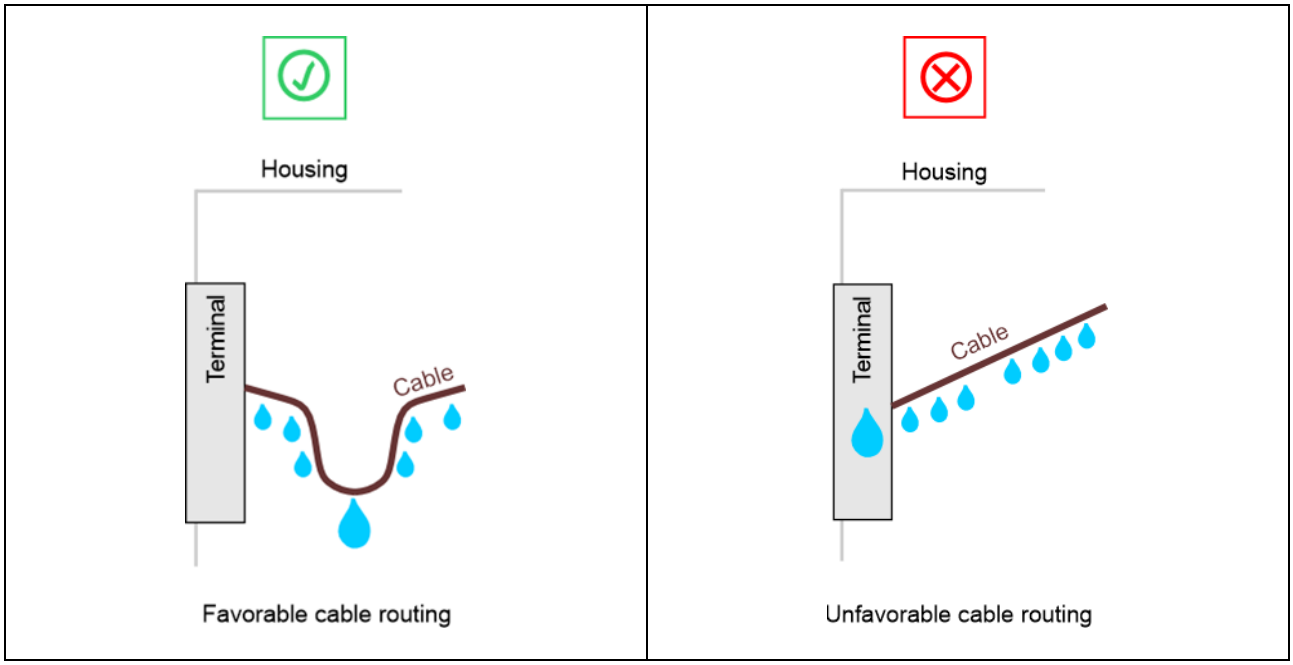


Fig 11: Cable routing to dissipate condensation moisture

7 Electrical connections

[X4/X5], [X6], [X8], [X9], [X10], [X11]

NOTE:

- Electrical connections may only be made when the device is de-energised.
- Correct polarity
- Observe the voltage range:
  Operating the terminal (even briefly) below the specified voltage range can trigger the safety mechanism see Protection against tampering
- Avoid short circuits

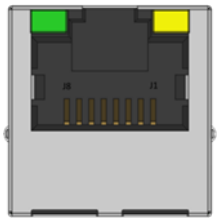
7.1 LAN-, Ethernet [X4] and [X5]

The LAN, Ethernet interface must be configured for host communication and/or as a cash register interface.

Plug / cable type	Description
Plug-type	10/100 Base-T with standard RJ-45 connection.
Recommended cable type	CAT 6 cable to ensure reliable operation at 10 Mbit/s to 100 Mbit/s.
Required plug	Type: RJ45
	Automatic „Crossover Detection“
	TCP/IP protocol
	IPv4

Tab 4: LAN-/Ethernet Interface

PIN assignment

PIN	Description	[X4], [X5]
1	TX(+)	
2	TX(–)	
3	RX+	
4	VETH(+)	
5	VETH(+)	
6	RX(-)	
7	VETH(-)	
8	VETH(-)	

Tab 5: PIN assignment “LAN-/Ethernet Interface

7.2 POWER MDB plug [X6]

Power is supplied via the MDB plug.

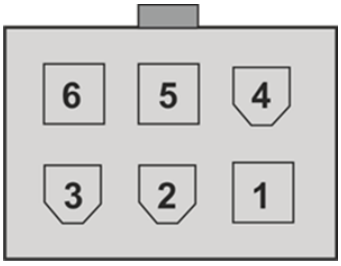
The device may only be supplied by a power source in accordance with 62368-1 Chapter Q.1 Power sources of limited power or with a power supply unit certified in accordance with NEC Class 2/LPS.

NOTE:

Requirement for the external wiring of the power supply:

- IEC 60332-2-1 and IEC 60332-2-2 for cable cross-section < 0.5 mm2
- IEC 60332-1-2 and IEC 60332-1-3 for cable cross-section > 0.5 mm2

PIN assignment

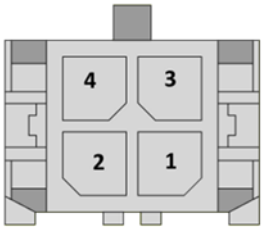
PIN	Description	Remark	[X6]
1	Power supply 10 bis 30 V_{DC}	-	
2	Power supply GND	-	
3	Wake Up	I/O	
4	MDB Master Receive	I	
5	MDB Master Transmit	O	
6	MDB Communications Common	-	
Plug type: Molex Micro Fit 39-01-2060, 6- pole with corresponding crimp contact			

Tab 6: PIN assignment "Power MDB"

7.3 COM 0 Interface RS232 V.24 [X8]

Terminal [X8] is the connection for an RS232 interface with V.24 level.

PIN assignment

PIN	Description	[X8]
1	Device RXD	
2	Device TXD	
3	Wake Up	
4	GND	
• Molex 43025-0400: Plug, 4-pole, grid dimension 3.0 mm, Dual Row, Molex Micro Fit housing • Molex 43030-0001: Crimp contact, Female, grid dimension 3.0 mm, AWG#20-24, Molex Micro Fit		

Tab 7: PIN assignment RS232 V.24 COM 0

7.4 Wake Up-Function [X6], [X8]

The Wake Up function can be used bidirectionally to address ("wake up") both the payment terminal and various applications on the machine.
A prerequisite for this function is standby mode, which is configured via software.

Depending on the application, the wake-up function must be connected to pin 3 of the

- POWER MDB plug [X6]

  or

- RS232 V.24 (COM 0) [X8]

To "wake up" the terminal, the potential at PIN 3 must be connected to GND.

NOTE:
To “wake up” the terminal, the potential at PIN 3 must be connected to GND.

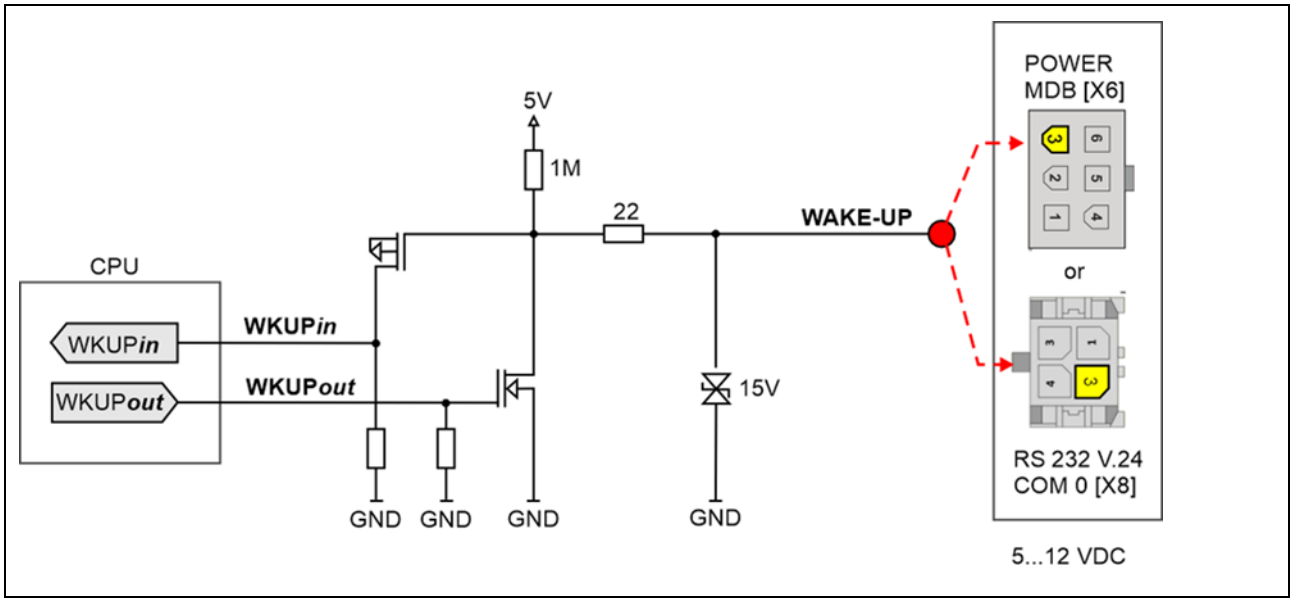


Fig 12: The circuit diagram excerpt shows the bidirectional “Wake Up” function and the wiring of the internal resistors

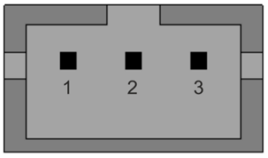
7.5 COM 2 / Serial Interface RS232 [X9]

The serial interface RS232 V.24 (COM 2) is used as a debug interface for software development.

NOTE:

This interface has no function on productive terminals (pRxx or pSxx).

PIN assignment

PIN	Description	Remark	[X9]
1	GND	-	
2	Device RxD	I	
3	Device TxD	O	
Plug type: JST PHR-3, 3 pole, with associated crimp contact			

Tab 8: PIN assignment “Serial interface RS232”

7.6 USB-OTG [X10]

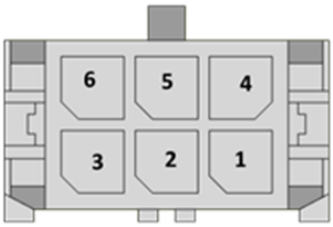
The USB-OTG interface is used to connect a USB host or USB device.

When configured as a USB device interface, it can be used as a virtual COM port (CDC-ACM) and network device (CDC-ECM).

NOTE:

A power supply via the USB interface is not possible.

PIN assignment

PIN	Beschreibung	Bemerkung	Spannung / Pegel	[X10]
1	DEV-Vcc	I (Device)	-	
		0 (Host)	5 V / 500 mA	
2	DEV-D (-)	I/O		
3	DEV-D (+)	I/O		
4	DEV-ID	Device	Pegel = Float	
		Host	Pegel = GND	
5	GND	-		
6	Schirm	-		

- Plug-type: Molex Micro Fit 43025-0600, 6-pole
  Crimp contact, Female, grid dimension 3.0 mm, AWG#20-24, Molex Micro Fit
- USB 2.0: Cable length ≤ 3 m

Tab 9: PIN assignment "USB-OTG"]

7.7 AUX Digital Input and Digital Output [X11]

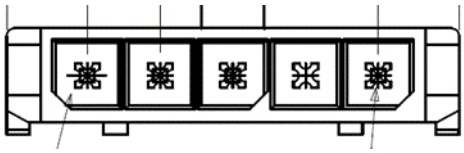
- 1 x digital output (power transistor with integrated protective function)
- 1 x Digital output for connecting an external speaker
- 2 x digital input

The digital I/Os must be configured via the software.

The output for the external speaker is a mono Class-D BTL (Bridge Tied Load) configuration.

- 2.6 W at 10% THD_N (4Ω, 5.5 V)
- 1.7 W at 10% THD+N (8 Ω, 5.5 V)

PIN assignment

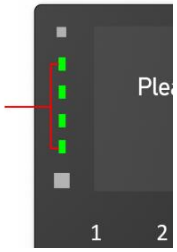
PIN	Name	Remark	Description	[X11]
1	Output	O	Open Drain to GND Max 30V 300mA	
2	IN1	I	Low 0V High 3V…24V	
3	IN2	I	Low 0V High 3V…24V	
4	GND	GND		
5	SPK P	O	Speaker positive	
6	SPK M	O	Speaker negativ	
Molex Micro Fit 43645-0600, 6-pin and the corresponding crimp contact				

Tab 10: PIN assignment „AUX Digital Input and Digital Output“

8 Signals

This chapter describes the signals generated by the cVEND operating system (optical, acoustic).
In normal operating mode, the cVEND user interface is controlled by the respective application.

Switch on and start the boot process

Signals	Description
First Signal 1x „beep“	• Switch on An acoustic signal is emitted (1 x „beep“). • The boot process starts automaticlly (Duration ca. 1 min).
All 4 green LEDs are flashing 4 LEDs 	• The four green LEDs then start flashing approx. 8 seconds after switching on. • They are switched off before the display “boot complete” is signaled on the display. • The option is configurable.
4 LEDs are flashing 4 times +„beep“ 1 time	• Bott process is finished 4 LEDs flashing 4 times + „beep“ 1 time
The FEIG logo and the firmware and hardware version numbers appear on the display.	
After the boot process, the installed applications start and display their individual messages.	

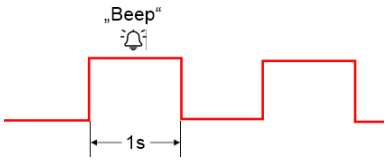
Tab 11: Description of the signals

9 Protection against manipulation

The terminal has integrated battery-supported logic for detecting tampering attempts.
As soon as a tampering attempt is detected, the terminal deletes the entire key material and switches to the 'TAMPER DETECTED' state.
Reactivation is only possible by the manufacturer in a certified safe environment.

After switching on, the cVEND touch reports the detected manipulation attempt as follows:

- The buzzer emits periodic tones for half a second every second.
- The message DEVICE OUT OF SERVICE appears on the integrated display in red letters on a black background.



Manipulation

- The buzzer emits an acoustic signal every second.
- The message **"DEVICE IS OUT OF SERVICE"** **"TAMPER DETECTED"** appears on the display in red letters on a black background.
- The manipulation message is sent cyclically with: 115200 baud 8 data bits, 1 stop bit, no parity bit
- - The appliance stops normal operation.

Important:
Read the instructions in " cVEND-touch-security-policy-03.03 "
https://www.feig.de/login/

Tab 12: Message "DEVICE IS OUT OF SERVICE"

NOTE:
Security keys in the device are deleted.

Security keys can only be reactivated by FEIG ELECTRONIC GmbH.

- Do not tamper with the device, e.g. by damaging it with force.
- Do not unscrew the device.
- Do not use or store the device outside the specified ambient temperature.
- Do not remove or short-circuit the integrated battery.
- Avoid short circuits
- To prevent spying on the PIN entry, the machine must offer sufficient privacy protection.
- Further information on the "Privacy Shield" can be found in "cVEND-touch-security-policy-03.03".

10 Declaration of confirmity

10.1 Declaration of conformity (CE)

CE	**CE-Konformitätserklärung** Hiermit erklärt FEIG ELECTRONIC GmbH, dass der Funkanlagentyp **cVEND touch** der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar https://www.feig.de/service/eu-konformitaetserklaerungen/

10.2 Konformitätserklärung (UKCA) / Declaration of Conformity (UKCA)

UK CA	**UKCA Declaration of Conformity** Hereby FEIG ELECTRONIC GmbH declares that the radio equipment type **cVEND touch** is in compliance with Directive No. 1206 Radio Equipment Regulations 2017. The full text of the UKCA declaration of conformity is available at the following internet address: https://www.feig.de/en/service/ukca-declarations-of-conformity/

10.3 Radio Approval - USA (FCC) and Canada (IC)

Products with corresponding marking on their labels have USA and Canada approval.

Product name:	**cVEND touch**
FCC ID: **IC:**	**PJMCVT** **6633A-CVT**
PMN: **HVIN:** **HMN:**	**cVEND touch** **cVEND touch**
Notice for USA and Canada	This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions. (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
Radiofrequency radiation exposure Information:	This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps. Ce transmetteur ne doit pas être place au meme endroit ou utilise simultanement avec un autre transmetteur ou antenne.

⚠ Caution:

Changes or modifications to this equipment not expressly approved by FEIG ELECTRONIC GmbH could void the FCC authorization to operate this equipment.

Installation with FCC / IC Approval:

FCC-/IC-NOTICE: To comply with FCC Part 15 Rules in the United States / with IC Radio Standards in Canada, the system must be professionally installed to ensure compliance with the Part 15 certification / IC certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States / Canada.

11 Technical Data

Mechanical Data	
Structure/Mechanics	Front side: aminated safety glass with integrated display and terminal electronics The frame is made of polycarbonate.
Dimension (B x H x D)	• Total: 93 x 144 x 48,6 mm / 0,37 x 0,57 x 0,19 inch • Visible: 82 x 120 mm x 14 mm /
Temperature range • Operation • Storage	 • −30 °C to +70 °C • −30 °C to +80 °C
Humidity	5 % to 95 % condensing (moisture-resistant coating)
Mechanical approvals • Shock and vibration • Vandalism protection • Protection class front side • Rail	 • IEC 60068-2-6, IEC 60068-2-27 • IK10 • IP65 • EN 50155, EN 45545, EN 61373
Dangerous substances	RoHS – 2011/65/EC

Tab 13: Mechanical Data

Electrical Data	
Power supply	12 - 42 VDC
Electrostatic discharge	EN 50121
Power consumption: Operation Standby mode	 < 15 W tbd. Wake-up via digital input; card recognition; time-controlled
MTBF (**M**ean**T**ime**B**etween**F**ailtures)	Gem. EN 61709 and 55°C: 75.000 h
NFC Interface	• ISO/IEC 14443A/B (NFC reader/writer mode) for OpenLoop and Closed Loop cards, • NFC devices in card emulation mode, Mifare, Sony Felica, ISO 15693 and further • Contactless cards • Transmission power ≤ 1 W
SAM Interface	2 x SAM sockets for ID000 format (SIM card), tested according to EMVCo Contact Level 1
Interface	• 2 x Ethernet – IEEE 802.3/Ethernet, 10/100 Mbps • 2 x RS232 (V.24) • 1 x USB 2.0 OTG • 1 x MDB Slave • 1 x Audio Output

Online connection	• Ethernet • IP via USB • Optional: LTE-Modem (2G, 4G) with connection for external mobile antenna
User Interface	• Bright color display 320 x 240 pixel; impact, scratch and fire resistant front glass; • 4 bright green LEDs for contactless transactions; sensor for brightness control; • internal Multi Frequency Buzzer • and connection for external speaker
Keyboard	• Illuminated, capacitive keyboard with 16 keys • Optional audio user guidance for barrier-free operation
QR-Scanner	1D / 2D Barcodes & QR-Codes
CPU & Security	• Secure 32 Bit ARM CortexA7 CPU, 1 GHz, real-time storage encryption, cryptographic hardware • acceleration, true random number generator, tamper-proof hardware, protection against side-channel attacks
Operating system	• cVEND.OS based on LINUX with cVEND Multi-Application architecture • Fail-safe updates for operating system and application • Crypto plug-ins to protect sensitive data
Storage	RAM 512 MByte; Flash 1 GByte
Clock	Real time clock (battery tampered; 20 ppm accuracy)
Battery	• 3 V Lithium battery, 1000 mAh, not chargeable • Lifetime: 15 years at 25 °C[1]
Payment certification	• PCI PTS 6.x, SRED • Common.SECC POI Protection profile V.4 • EMVCo Contactless Level 1
Electrical approvals	• CE • UKCA • FCC • IC

Tab 14: Electrical Dat

[1] The battery is used for the safety function and the RTC. A higher ambient temperature leads to a shorter service life.

12 ##Optional Accessory

7072.000.00	cVEND EXT.LTE-A - LTE Modem Extension Board	Piggyback expansion board for cVEND touch and cVEND PIN II with LTE modem for connecting an external antenna.
	### IK10 frame ###	

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