Shop Validator PVT25/C





Device Manual

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1 Introduction

1.1 Glossary of Terms Used

Automatic Pay Station (PKA)

The Automatic Pay Station is a payment processing machine, designed for pedestrian access. It is configured to accept the parking ticket/ChipCoin, evaluate the associated fees due, and accept combinations of cash, credit cards, system coupons, and/or system value credentials for payment.

Card Class

The Card Class is an unsigned integer encoded on a parking medium that serves as an identifier of the tariff to be assigned. The standard card class for non-discounted parking is 0. The shop validators used by the retailers encode the card class to a unique number and thus changes the tariff to be used. In this way, the retailers grant parking discounts. The assignment of the card class to a cheaper tariff is done through the entervo *Tariff Management* module. By evaluating this card class in the settlement report, a car park provider can identify an exact number of all validated parking tickets that were issued by a specific shop and were used for discounted parking.

A short-term parking medium obtained at entry has a predefined card class 0. Shop validator encodes the class to a unique number. In case of the PVT25/C validator, this number is from a range 1-63 when 16 different car park provider accounts can be set on a shop validator.

ChipCoin[®]

The ChipCoin is the primary short-term parking medium in the parking management system of the same name. It is a coin-shaped contactless and read/write transponder. Its coin form enables perfect processing in the automatic systems. The reusable transponder works passively, i.e. without battery. The ChipCoin is issued at the entry control device and retracted at the exit control device. The retracted ChipCoins are used to replenish the entry control devices.

Customer

The Customer is in general a user of the provided parking services.

Short-term Parker

The Short-term Parker is a customer who uses a parking facility for a time necessary for doing shopping and who uses a ChipCoin.

Short-term Parking Medium

The Short-term Parking Medium or entry parking medium is used for the general run of customers. It is issued on request (at the press of a button by a customer) at the car park entrance. It receives clearance at a pay machine or manual vending machine after the parking charge has been paid. It is accepted at the exit if in addition to meeting various conditions, the coded tariff related period (date/time) is greater than the actual time or does not exceed it by more than the permitted margin. The parking medium is retained at the exit.



Tariff

The Tariff represents the assignment of all data that are required for tariffbased evaluation of a parking transaction. This includes the following:

- □ Validity period
- □ Weekdays
- □ Special days
- □ Tariff segment with step times and amounts
- □ Tariff options
- □ Maximum prices

Transponder Card

The S&B transponder card presents a plastic card with embedded HiTag and PCF7930 chip with read/write memory and aerial, both sides in specified sections with coloured information and advertising imprint. This card commonly represents a money and time value card or a season parker and customer card. It can be used also as an identifier for online and offline door readers.

Validation

The Validation of a ChipCoin leads to the fee calculation based on a cheaper tariff. Validation can take place in various ways. In many cases, the ChipCoin is recoded by retailers to grant a discount to their customers. The operator of the parking facility settles these discounts with the retailers.

1.2 Intended Use

The shop validator PVT25/C re-encodes ChipCoin parking medium to provide shopping short-term parkers with parking discounts. The shop validator is an independent device that is not connected to a parking management system. Data required for authorization of a parking discount are transferred via a wireless connection to a shop validator that encodes all relevant data.

Validated ChipCoin is used at an automatic pay station, manual sales device or at exit terminals where a cheaper tariff is calculated.

The following limitations must be considered regarding the use of the PVT25/C:

- \Box 16 shop owners can be assigned to one device.
- □ One card class can be assigned per owner.
- □ A shop validator encodes only one parking discount at one validation process.
- □ A ChipCoin is rewritable and can be re-encoded more times.

1.3 Place of Use

The shop validator PVT25/C is used by shops that provide their customers with short-term parking on the advantaged conditions using the ChipCoins.

The PVT25/C can be used also as a door reader which requires installing a relay instead of a beeper. The consequential setting of DIP switches is requires. In both cases, it is intended only for internal use.

When a customer pays for his/her purchase at the cash desk, he/she passes ChipCoin and a shopping assistant places its surface in a parallel way onto the mark in the centre of the PVT25/C terminal. After successful validation, the ChipCoin is re-encoded , i.e. a new card class is recorded.



Customer uses the ChipCoin at the automatic pay station, manual sales device or exit terminal. The final sum for parking considers discount provided by shop.

1.4 Scope of Delivery

The PVT25/C device is delivered in the following compulsory bundle:

- □ PVT25/C device (S&B article no.: 04 22740)
- □ External power supply unit (S&B article no.: 50 60640)

1.5 Symbols Used

The following symbols are used in this manual.

1.5.1 Danger Sign

Important instructions that you must observe are identified in this manual with the danger sign.



Warning! Carefully read this information! Non-observance is capable of causing malfunctions.

1.5.2 Information Sign

Tips and recommendations that facilitate the product's use are identified with the information sign.



Note / general information



2 Technical Specifications

2.1 Dimensions, Weight and Design



Parameter	Value
Length	139 mm
Width	84 mm
Height	24 mm
Weight	cca 125 g
Length of Power Cord	2000 mm

Housing of the device is a shock-resistant plastic construction with external power supply unit. A yellow read/write area and two status LED lights are placed on the top side.

The device designed for validation is equipped with a buzzer. If the PVT25/C serves as a door reader, the buzzer is replaced with a relay.

Power socket is situated in the rear of the device.



2.2 Technical Specifications

Specification	Description	
Potential Number of Card Classes	 Up to 16 discount provider accounts can be created One of 63 classes can be assigned to each provider account The provider accounts are configured by integrated keys and provider cards (transponder technology) 	
ChipCoin-/Transponder Pro- cessing	Non-contact read/write system for tran- sponders of type HiTag1 and PCF7930	
Connections	Socket for power supply (via external power pack)	
Power Supply	Via external power pack: – Primary: 230V/50Hz or 120V/60Hz – Secondary: 5V DC, 650 mA	
Power Consumption (ap- prox.)	1,5 VA	
Temperature Range	+10 °C +45 °C	
Air Humidity	±0 % 95 %	
Approvals and Conformity	CE, RTTE	

3 Course of Discounted Parking





3.1 Validation Process

This chapter is dedicated to validation of a ChipCoin obtained from a customer at a cash desk. A complete process of discounted parking is captured in chapter **Course of Discounted Parking** on page 11.

The following procedure must be kept to validate a ChipCoin with the PVT25/C:

- Place the ChipCoin in a parallel way onto the yellow Chip Coin mark in the centre of device.
- 2 Device encodes a card class which is accompanied with a short blink of green light and a long sound signal.
- 3 Wait until green and yellow LEDs light up steadily.
- Now, validation has successfully completed and the ChipCoin can be returned to a customer.

3.2 Device Indications of Validation

Course of validation process is indicated via two operational status LED diodes on the top of the PVT25/C device. The following LED behaviour describes events which can occur during validation:

Status	Green LED	Yellow LED	Beeper
Start of device	3 flashes	3 flashes	3 beeps
Device ready for use	-	On	-
Validation in progress	On	Short flash	Long beep
Validation finished suc- cessfully and tran- sponder still placed on device	On	On	-
Validated transponder placed on device	On	On	-
Successful operational functions	Short flash	-	Short beeps
Faulty operational func- tions		3 short flashes	3 short beeps



4 Device Configuration

Configuration of the PVT25/C validator involves the following steps:

- □ Connection of the device to the power supply
- □ Initialization, i.e. deletion of the existing configuration
- □ Setting a card class via setting DIP switches on the circuit board
- □ Setting a car park provider account through ChipCoin or transponder card with master data

4.1 Connecting to the Power Supply

The PVT25/C device is powered via an external power supply that is delivered with a plug adapter. A correct connection of the adapter to the power cable terminator is essential for solid operation. To connect or ensure the correct polarity of the connection, make sure that the arrow points at the minus symbol as the following picture illustrates:





Incorrect connection – arrow on the adapter is at plus symbol on the power cable - can cause fatal damages for functionality of the device. Be always aware of the correct polarity – even if you obtain a power supply with the adapter that has been already connected to the power cable terminator.

In case of incorrect polarity, disconnect the adapter from power cable by pushing two click-in stops outwards the cable and find the correct connection considering minus and plus symbols on the power cable – the arrow on adapter points at the minus symbol on cable.



4.2 Initialization of the Device

Preparation of the PVT25/C device for configuration requires deleting the existing configuration data as follows:

1 Unplug the device from a power supply.



Unloose four screws on the bottom of device and open the housing.



Please be aware that an upper part of the housing is wired with a circuit board. Beware of tearing out any of the ends of connection cable.

- 3 Connect the device to the power supply.
- On the circuit board, push the yellow buttons simultaneously.



- 5 After two seconds, the green LED lights up.
- 6 Release the buttons.
- Successful initialization is indicated by a long sound signal and steady yellow light.

4.3 Creation of Shop Owner Account

Deployment of the PVT25/C requires setting of the particular shop owner account that consists from the following two procedures:

- □ hardware setting of DIP switches on the circuit board,
- □ software setting via ChipCoin or transponder card with recorded master data.

4.3.1 Setting of Basic Functionality

Positions of the DIP switches affect basic functionality of the device – it can serve as a shop validator or a door reader. The basic settings apply to the DIP switch of number 7 and 8. The device must be set as follows:

Function	Position of DIP switch no. 7	Position of DIP switch no. 8
Shop validator	on/off	off
Door reader - blocked	off	on
Door reader – ac- tive	on	on

enterio



Fig. 4: PVT25/C - active validator: switches 7 and 8 are OFF



Fig. 5: PVT25/C - active validator: switch 7 is ON and switch 8 OFF





Fig. 7: PVT25/C - inactive door reader: switch 7 is OFF and switch 8 ON



The PVT25/C used as a door reader requires installing a relay instead of a beeper.

4.3.2 Setting of Data Validation

The following procedure covers steps of creating a shop owner account:

 On circuit board, set DIP switches so that they correspond to a card class expressed as a binary number.

Zero in a binary number corresponds to OFF position of DIP switch and one to ON position.

There is one unit of eight DIP switches on a circuit board. The DIP switches can be set in OFF or ON position – ON position is on the side of numbers (1 - 8). The position is activated when the switch is flipped to one of the sides.

Setting of a card class is carried out on the DIP switches of numbers 1 – 6. Switches of numbers 7 and 8 affects a basic function of the device, i.e. if the PVT25/C works as a shop validator or a door reader.

Example:

Selected card class is 3. This decimal number requires converting to a binary number, i.e. to **0000 0011**.



Conversion of decimal numbers to the binary system is carried out via calculator as follows:

After selecting **Programmer** or **Scientific** view mode (depends on calculator version), type in decimal value when **Dec** mode is activate. Then, switch to the **Bin** mode. Displayed number presents binary version of the decimal number.



iew <u>E</u> dit <u>I</u>	<u>H</u> elp	<u>V</u> iew <u>E</u> dit <u>H</u> elp
	3	11
	0000 0011 0	0000 0011
 Hex Dec Oct Bin 	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Hex Mod A MC MR Ms M+ Dec 0 <t< th=""></t<>
© Qword © Dword © Word @ Byte	Or Xor D 4 5 6 * 1/x Lsh Rsh E 1 2 3 - = Not And F 0 , + =	Qword Or Xor D 4 5 6 * 1/x Dword Ush Rsh E 1 2 3 - Word Ush Rsh E 1 2 3 - Not And F 0 , + +

The binary number **0000 0011** must be read from the right to the left. DIP switches are taken from the left to the right - from the switch number 1 to 6. Switches are switched to ON position matching number 1 as it is in the picture below:



- 2 Connect the device to the power supply.
- 3 On the circuit board, push one of the yellow buttons for two seconds at least. A green LED lights up. Keep pushing.



After two seconds, the yellow LED lights up. Now, both LEDs light concurrently.

5 Release the button.

Now, a shop owner account is created and a card class identifying this account is set. In the next step, validator must load data that will identify the relevant car park.

6 Place the ChipCoin or transponder card with recorded master data in a parallel way onto the yellow **Chip Coin** mark – to the coil - in the centre of top part of housing. This must be done within a minute after creation of shop owner account.

Successful placement is followed with a long sound signal when the green LED goes out and the yellow one lights up.

Master data that ChipCoin or transponder card carries are produced via manual point of sales or entry device of the respective car park. The shop validator stores them as data that are necessary for initialization of the validation process. Otherwise, faulty operation is indicated.

The device is ready for use.



To create another car park provider account, repeat steps from 1 to 6 before a ChipCoin. Up to 16 accounts can be assigned to one PVT25/C device.



5 Assigning a Card Class to Tariff

Card class presents a digit that is encoded in a ChipCoin or a transponder card. It serves as an identifier of a parking discount and shop owner. In the parking management system, this card class is assigned to a specific tariff which enables creating and redeeming parking discounts. Each shop owner disposes of a unique card class so that it serves also as a shop identifier. This is useful when a month settlement of granted parking discounts is provided.

The following procedure is a general description of process when a card class is assigned to tariff using the *entervo Tariff Management* module:

- Configure a card class and shop owner account on the PVT25/C device keeping instructions in chapter Setting of Data Validation on page 15.
- 2 Start the *entervo Tariff Management* module.
- 3 Create a tariff for discounted parking. A complete process can be found in the user's manual dedicated to the *entervo Tariff Management*.
- In the right **Tariff** area, click **Tariff assignment**.
- 5 Click the line with a created tariff. On the toolbar, click **Edit on**. A new configuration area appears.

Tariff number Name	6 Tarif 2013 Park 2	Operator numbe Computer numbe	er SCHEIDT & BACHMANN GmbH v er 2010 v
		Facilit	y <any></any>
Tariff data		Card data	
Tariff module	Standard tariff	Card typ	e <any></any>
Tariff data	Tariff data short term	Card subtyp	e <any></any>
Validity	current millennium ++	Card clas	s from 0 to 0
Tariff structure	Tariff structure		

6 In the **Card data** area, in the **Card class from ... to ...** type in a configured card class or a range of card classes if you intend to assign more than one card class to a tariff.

Card data		
Card type	<any></any>	•
Card subtype	<any></any>	•
Card class	from 52 to	52



Card class 0 is a predefined card class for all short-term parking media obtained at entry.

7 In the toolbar, click **Edit off**.

✓ Now, a parking system recognizes all parking tickets with a defined card class as parking tickets assigned to a special tariff.

Summarizing list of all redeemed parking discounts is available via the entervo Settlement module. Usually, a car park operator provided a shop owner with a settlement where discounted parking tickets are listed as displayed in a picture below:

Ro	Article	Article No	Article Group	Quantity	Amount
1					
2			**** TURNOVER ****		
3	2099	9511	Turnover cashl tot		6,00
4	2099	9504	Turnover cash tot		506,50
5	2099	9503	Turnover total		512,50
6					
7			*** VAT (Sum of single items) ***		
8	1002	1	VAT 15,00 %		81,81
9	2099	9600	VAT total		81,81
10					
11			**** DEVICE-RELATED TURNOVER ****		
12	2099	9503	Manual sale device 1 2010	1 4 2 4	506,50
13					
14			**** TURNOVER BY CARD SALES ****		
15	0	100	Short term ticket card class 52	2	0,00
16	0	101	Prepaid ticket	1	17,00
17	0	102	Free tariff ticket	25	233,50
18	0	108	Substitute credit	1	20,00
19	2000	900000	P.tick.sales tot.	29	270,50



6 Configuration Test

Before deployment of the PVT25/C device in shopping premise, outputs of the validation process must be tested. This chapter is dedicated to checking encoded data – card class – on validated ChipCoin or transponder card.

Checking a card class and other output data integrated into ChipCoin or transponder card

To check data encoded by shop validator into ChipCoin or transponder card, keep steps as follows:

- Validate a short-term parking medium (ChipCoin / transponder card) via a configured PVT25/C device.
- 2 Launch the *entervo Cashier* module.
- 3 Click **Read ticket** and place the parking medium onto reading terminal. A new window with complete information on the ticket appears.
- 4 Check if all data stated in the window checks up with required values.
- **x** If not, a configuration must be repeated.



7 Maintenance

The PVT25/C is due to its construction a maintenance-free device and requires only general check of functionality and cleaning the surface of housing.

7.1 Maintenance Survey

This maintenance instruction should be used as pattern for the owner's maintenance list or should be copied for direct use.

PVT25/C	Maintenance	Interval	Cyclic maintenance
General maintenance	0	every 6 months	

 \circ Maintenance can be carried out by experienced personnel according to written instructions!

• Maintenance must be carried out by service personnel that were trained by S&B or by S&B service technicians!

Device / Location:	Date:	Time:	Name:	Signature:
Comment:	•		•	

Maintenance list:

1. General Maintenance

Clean device outside	Tick here and enter your comments:

7.2 Preventive Maintenance

1. Initial Checking the Functionality

Connect the device to a power supply unit. After flashes of LED lights and beeps, a full functionality of the device is indicated with a steady yellow LED. Carry out a configuration test keeping instructions in chapter **Configuration Test** on page 20.

2. Cleaning of the Housing Surface

Cleaning interval of the housing after 6 months.





The device has to be unplugged from the power source before cleaning.



- □ The external synthetic coat of the housing should be cleaned biannually with simple suds (washing-up liquid).
- □ A retouch of the coat (as need may be) can be carried out by means of a colourless, customary polish.

3. Final Checking the Functionality

Connect the device to a power supply unit. After flashes of LED lights and beeps, a full functionality of the device is indicated with a steady yellow LED. Carry out a configuration test keeping instructions in chapter **Configuration Test** on page 20.



8 Troubleshooting

This chapter is dedicated to the problems that can arise within manipulation with a device. Problem determination is assisted with LED status indication. The LED behaviour is detailed in chapter **Device Indications of Validation** on page 12.

The following hints offer solutions for the most frequent error events:

None of the LED lights up after plugging in

Description: After plugging the device into the electrical network, any of two LED lights up.

Reason: Incorrect connection of the plug adapter, defective circuit board or power supply.

Solution: Check out visually if the adapter is correctly connected to the power cable – the arrow on adapter must be at the minus symbol on cable. If not, keep instructions in chapter **Connecting to the Power Supply** on page 13. to establish correct connection.

In case of defective circuit board or power supply, replacement of these device parts is needed. For more information, see **Spare Parts** on page 24.

Yellow LED blinks constantly

Description: After placing ChipCoin or transponder card onto marked read/write area, yellow LED flashes constantly.

Reason: ChipCoin or transponder card carries invalid data that are unrecognizable for the device and the re-encoding process cannot be initialized therefore. ChipCoin is not re-encoded. The device can encode only ChipCoin which card type is 1 – initially encoded at entry or at manual sales device as a short-term parking medium.

Solution: The parking medium with correct card type must be placed onto the PVT25/C device.



9 Spare Parts

Compact construction of the PVT25/C eases replacement of defective device parts. In case of disrupted running, technicians replace only spare parts included in the table below:

Spare Part	S&B Article Number
External power supply unit	50 60640
Circuit board	07 26882

9.1 Replacing a Power Supply

If the yellow LED indicator on the device is not alight with a constant light or a power cable is defective, a power supply must be replaced.

9.2 Replacing a Circuit Board

The following procedure covers disassembling the device in purpose of replacement of a defective circuit board (S&B article no.: 07 26882):



For safe manipulation with a device, unplug the device from a power supply unit to avoid damages caused by electric power.

After unloosing four screws on the bottom, open the device.



Please be aware that an upper part of the housing is wired with a circuit board. Beware of tearing out any of the ends of connection cable.

- Unscrew four screws to unloose the circuit board from housing.
- Onstick the coil from upper part of housing.
- 4 Replace a defective board with a new one.
- ✓ After reassembling, make a test of functionality.



10 Disposal



Packaging materials must be disposed of according to local regulations.



This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.



Disposing of batteries into household garbage is not permitted; you are bound by law to return used batteries. Used batteries can contain harmful substances which can damage the environment or your health when not disposed of correctly. Batteries also contain important commodities such as iron, zinc, manganese or nickel which will be recycled. You may send the used batteries back to us, or you can return them to your local recycling center free of charge (recommended). The symbol of the crossed waste container is a warning against disposing of hazardous materials into household garbage.

11 CE-Conformity Certificate

EC DECLARATION OF CONFORMITY EU-KONFORMITÄTSERKLÄRUNG				
We declare / Wir erklären	t the equipment	SCHEIDT&BACHMANN Scheidt & Bachmann GmbH Breite Str. 132 41238 Mönchengladbach		
in alleiniger Verantwortung, das	a das Produkt	Germany		
Designation: Bezeichnung:	Validators for ChipCoins Rabattierer für ChipCoins			
Model: <i>Modell</i> :	PVT20/C, PVT25/C			
s according to the following cod	es:			
2006/95/EG	Low Voltage Directive / Niederspannung	srichtlinie		
1995/5/EG	R&TTE Directive / R&TTE Richtlinie			
ETSI EN 300 330 -1 -2	Radio Equipment and Systems (RES) – S	hort Range Devices (SRD)		
ETSI EN 301 489 -01 -03	EMC and Radio Spectrum Matters (ERM) Part 3: Specific conditions for SRD's	- Part 1: Technical Requirements,		
Applied standards and comparal Angewendete Normen und norm	ble documents, particularly: ative Dokumente, insbesondere:			
EN 55022	Immunity Characteristics / ITE - Störfesti	Radio Disturbance / ITE - Funkstoreigenschaften		
EN 60950	Safety of Information Technology Equipr	Immunity Characteristics / // E - Storrestigkeit		
	Sicherheit von Einrichtungen der Inform	ationstechnik – ITE		
EN 61000-3-2	Harmonic Current / EMV - Oberschwingu	ngsströme		
EN 61000-3-3	Voltage Fluctuation / EMV - Spannungss	chwankungen		
Date / Ausstellungsdatum: 12.11	2007	Munidor		



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13 Record of Revisions

Revision	Date	Description	Author
-	12.08.2013	Creation	M. Lejtrich



14 Notes