



## Device Manual

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# 1 Introduction

This device manual is intended **to guide S&B technicians and car park service personnel** through technical description of the *PVT40/C shop validator*, configuration and software update procedures or detailed information about troubleshooting. This document is also about operational and maintenance instructions.

The PVT40/C shop validator **enables shop owner to grant parking discounts** to shopping customers.

The PVT40/C device consists from the *Elatec TWN4 Reader/Writer device* in S&B construction **and proprietary S&B software** that ensures validating transponder parking media, configuring the device and administering parking facility accounts.

## 1.1 Intended Use

The *PVT40/C shop validator* enables reading and encoding ChipCoins and transponder cards **to grant reduction of parking fees** to short-term parking customers. To do so, shop owner buys credits from parking operator and these are transferred to a specific account in shop validator placed in a shop.

## 1.2 Functions

**Colour LCD display and four buttons** enable accurate manipulation with device. Compact size of the device designates it for convenient use anywhere. The use is limited by power supply as the device cannot operate on batteries. In addition, **solid construction** offers long durability of the device.

The shop validator is **easy to operate**. Everyday operations such as validation, reporting and simple troubleshooting – warning messages gives clear information about problem - can be handled by sales staff as easy as possible. Technical assistance is needed only for creation a new account, account top-up, software update or hardware issues.

**Variety of parking discounts** can be configured and granted to customers. There are **five types** of parking discounts that can be provided:

- Money discount
- Time discount
- Discount by encoding pre-time
- Discount by encoding current time
- Tariff-switch discount

Discounting is provided by means of **money, time and point credits** that are stored within parking facility accounts in the shop validator. The owner buys credits from parking operator who runs parking facility where shopping customers park. Thereafter, the credits are transferred to a parking facility account in the shop validator from where they are distributed to customers as parking discounts.

Parking facility accounts **for 20 different parking facilities** and corresponding 20 different parking discounts can be created and stored in a shop validator.

The software provides **prompt reporting** so shop owners can have detailed information about parking media in use, particular accounts and running operations. **Automatic notice to low balance** in the account helps shop own-

ers to plan provision of parking discounts. They are always informed about amount of granted discounts and balances in the particular accounts.

In addition to this, **setting of rejection time** enables fraud prevention and full control over parking discounts. By way of rejection time, single or multiple discounting can be set.

## 1.3 Place of Use

The *shop validator PVT40/C* is in use of shops that enable discounted short-term parking using ChipCoins or transponder cards. It is intended only for indoor use. The device can be placed horizontally at the cash desk.

## 1.4 Limitations

By using the PVT40/C, the following limitations must be considered:

- Graphical user interface *cannot* be modified by requests of customer.
- One parking discount can be provided by shop owner in a parking facility.
- Account top-up is *not* carried out remotely but through buying credit to the transfer card at the manual sales device or *entervo Cashier* station.

## 1.5 Glossary of Terms Used

### 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 entry lane of a car park. It receives clearance at an automatic pay station or manual sales device 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 current time or does not exceed it by more than the permitted margin. The parking medium is retained at the exit.

### 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.

### 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.

### **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 discounted parking tickets that were issued by a specific shop and were used for discounted parking.

### **Tariff**

The Tariff represents the assignment of all data that are required for tariff-based 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

### **Parking Facility Account**

Account that is created in the shop validator placed in a shop. It is related to a shop owner using the device and a parking facility for that parking discount is valid. Shop owner tops up the account and its balance is subtracted to provide parking customer with a parking discount.

### **Transfer Card**

Value transponder card or ChipCoin that is applied for creating parking facility account or topping up this account in PVT40/C device. Data such as parking facility code, car park owner number and amount of top-up are encoded at the manual sales station, and then transferred to the shop validator.

### **PMS**

Parking Management System. System for management of a multi-storey car park or parking area.

## **1.6 Parking Facility Account**

This account is created in the shop validator placed in a shop. Account is identified by car park owner number and facility code. Example of this identification is 45802/2028. This number can be used in more shop validators for account identification.

Through a shop validator, exclusively one parking discount can be granted for a parking facility.

In principle, shop owner tops up account in the shop validator with credits that are bought from car park operator. Parking discounts provided to customers are subtracted from balance in this account.

There are three types of credits that are used in accounts:

- Money**
- Time**
- Point**



*20 different accounts can be created on one PVT40/C device. Hereby, only one parking discount can be assigned to one parking facility. Example: Account 45802/2028 grants time discounts to ChipCoins from parking facility 2028 and account 45605/2030 provides granting money-value discount to ChipCoins from parking facility 2030.*

*For more information about creating parking facility account, see "Creating Parking Facility Account" on page 22.*

## 1.7 Parking Discounts

There are five parking discounts that can be applied by means of the PVT40/C shop validator:

- Money discount:** Parking fee is reduced by a certain amount of money, e.g. 1,- EUR. Discount is applied through money value customer card (discount increases money balance in this card) or ChipCoin (parking fee is deducted).
- Time discount:** Parking time is reduced by time credits of a certain period of time, e.g. 1 hour, assigned to ChipCoin.
- Discount by pre-time encoding:** Tariff-relevant usage time (e.g. entry time) is postponed to the future and so the duration of stay is reduced. ChipCoin is applied here.
- Discounting by encoding current time:** Current time is encoded as a new tariff-relevant time so that the stay starts with time of validation. This applies to ChipCoins.
- Tariff-switch discount:** Card class in the ChipCoin is changed to class value that is assigned to tariff reducing parking fee. Parking fee is calculated by cheaper tariff, then. This applies to ChipCoins.

For more information, see "Parking Discount Types" on page 15.

Type of discount is set while creating parking facility account as described in "Creating Parking Facility Account" on page 22.



*Only one type of discount can be assigned to a parking facility.*

Amount of provided parking discount is set through the PVT40/C user interface as described in "Configuring Parking Facility Account" on page 23.

## 1.8 Single and Multiple Discounting

Using a ChipCoin or transponder card, parking customer can apply for parking discount in more than one shop equipped with shop validator. Depending on card types and validator configuration, online validation results in two types of discounting:

### □ Single discounting

If the rejection time is set the parking medium can be validated through shop validator only once after elapsing this time. Otherwise, a warning message appears.

This applies only to one shop validator because a list of all validated parking media is stored only locally in the device. If customer applies for discount through another shop validator the parking medium which has been validated can be discounted.



*After restarting a device, list of all blocked ChipCoins and transponder cards is deleted.*

### □ Multiple discounting

All ChipCoins and transponder cards – if no rejection time is set – can be validated for multiple times and the discounts are cumulated and assigned to a parking medium. Multiple discount is provided even if cumulated amount of time or money credits exceeds parking fee.



*There are some special conditions of multiple discounting:*

*Money discount can be cumulated also with other types of discount in ChipCoin or transponder card.*

*If parking medium has been validated to grant tariff-switch discount it cannot be validated any more.*

## 1.9 Scope of Delivery

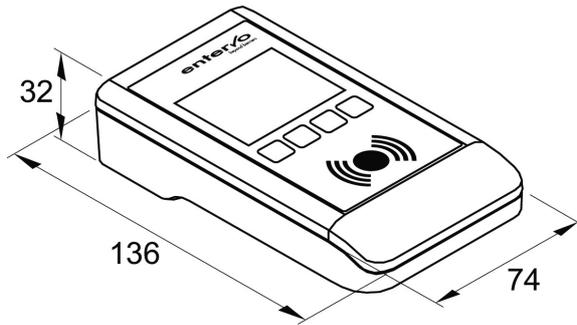
The shop validator PVT40/C is delivered based on the following hardware:

- Elatec TWN4 Reader/Writer device in S&B construction
- Charging cable (Art. No. 04 21009)

## 2 Technical Specifications

The shop validator PVT40/C is based on the *Elatec TWN4 Family – OEM Reader/Writer* board equipped with housing with white read/write area, display and four programmable buttons.

### 2.1 Dimensions



Parameter	Value
Length	136 mm
Width	74 mm
Height	32 mm
Weight	140 g

Housing of the device is a shock-resistant plastic construction with a power supply via external power pack. Power socket is placed in the rear of the device. The device cannot be supplied by batteries.

There are four programmable buttons, a white read/write area and colour LCD display on the top side.



Fig. 1: Front view



Fig. 2: Rear view



Fig. 3: Side view



Fig. 4: Bottom view

## 2.2 Specifications

Specification	Description
<b>Data Connection</b>	Multipoint connector, serial, RS232
<b>Frequency of Chip-Coin/Transponder</b>	125kHz
<b>Potential Parking Discounts</b>	<input type="checkbox"/> Money discount <input type="checkbox"/> Time discount <input type="checkbox"/> Pre-time encoding discount <input type="checkbox"/> Current-time discount <input type="checkbox"/> Tariff-switch discount
<b>ChipCoin/Transponder processing</b>	Read/Write system for HiTag1 transponder
<b>Display</b>	2,4" graphic colour LCD display
<b>Display resolution</b>	320 x 240 pixels (QVGA)
<b>Power Supply</b>	DC power: 5V
<b>Operating Temperature</b>	+10°C to +45°C
<b>Air Humidity</b>	±0% to 95%
<b>Place of Use</b>	Indoor
<b>Memory</b>	<input type="checkbox"/> 256 kB of persistent memory <input type="checkbox"/> 48 kB of RAM
<b>User Guidance</b>	<input type="checkbox"/> Colour LCD display <input type="checkbox"/> Four programmable buttons

## 2.3 Connections

In addition to power supply, the PVT40/C device can be connected to host computer through the serial RS232 interface. Serial connection is usually used for software update. This connection requires using a cable with multipoint connector that combines serial and charging interface (art. no. 0420875).

The female connector is placed on the backside of the device and structure of soldered connections is as follows:

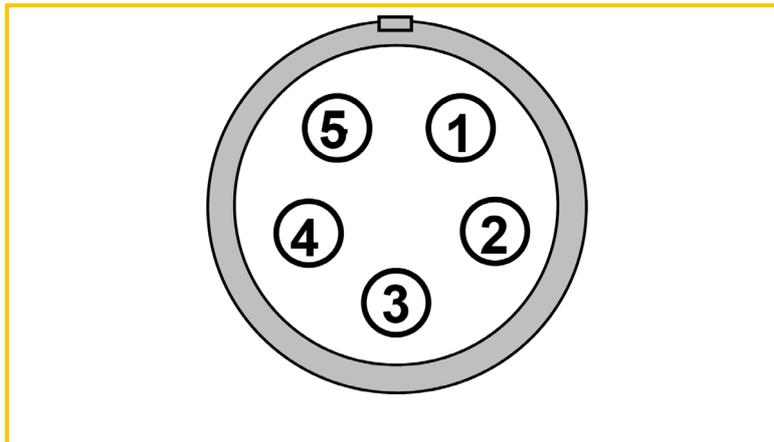


Fig. 5: Multipoint connector of the combined power and serial cable

Socket No.	Description
①	Plus pole of power connection
②	Serial interface TxD
③	Serial interface RxD
④	Minus pole of power connection (Gnd)
⑤	Screening (Gnd)

## 3 Parking Discount Types

Parking discounts are provided by deducting money, time or point credits from parking facility accounts in the PVT40/C device. This can occur only if data on the parking medium (i.e. ChipCoin or transponder card) corresponds with parking facility and type of parking discount configured in the parking facility account.

This chapter describes types of parking discounts and how they are provided in the parking management system.

### 3.1 Discount Card Types

The following table lists all card types that can be validated through the shop validator PVT40/C:

S&B Card Type	Card Subtype	Card Type Name	Validation Type
1	-	Short-term parking ticket (ChipCoin)	Granting time or money discounts, changing class or changing tariff-relevant time to current time
6	0	Money value card	Topping up money value
6	4	Money value card with control function	Topping up money value
6	7	Money value card for single use (Money voucher)	Topping up money value

### 3.2 Money Discount

Parking fee is reduced by amount of money that is set as Step Value in money account. After validation, the amount of money is deducted from balance in the **money** parking facility account.

#### Principle

This discount is applied to ChipCoin and money value customer card (discount increases money balance in this card). In case of the ChipCoin, money credits are encoded in the *Money credit* field in ChipCoin and parking fee is reduced with them during payment.



*If ChipCoin money balance exceeds payable amount remaining credits cannot be used any more.*

The following message appears after successful validation:

Template:

Credit of money:  
[Money value] €

Example:

Credit of money:  
001,00 €

The final amount of money credit (it is 1,00 € in this case) shows money balance in ChipCoin or transponder card.

### 3.3 Time Discount

Parking time is reduced by a period of time that is set as Step Value in minutes in time-value account. After validation, minutes are deducted from balance in the **time** parking facility account.

#### Principle

Discount is applied to ChipCoin while it adds time credits that are encoded in the *Time credit* field in ChipCoin. During calculation of fee, these encoded time credits reduce the duration of stay.

The following message appears after successful validation:

Template:

Credit of Time:  
Hours/Min. [time value]

Example:

Credit of Time:  
Hours/Min. ... 1:00

The final amount of time credit (it is an hour here) shows balance in validated ChipCoin or transponder card.

### 3.4 Discount by Encoding Pre-time

Parking fee is reduced by postponing tariff-relevant time to the future by time that is set as Step Value in minutes in time account. After validation, minutes are deducted from time parking facility account.

#### Principle

Time that is relevant for tariff calculation – entry time, time of last discount or payment - is postponed to the future. New time is encoded in the *Tariff relevant usage time* field. This reduces duration of stay as later tariff-relevant time is regarded during calculation of parking fee.



*If the tariff-relevant time is postponed to later time than current time, i.e. parking fee is zero, customer can exit car park without payment. Obviously, only if pay bit is set to Yes or parking system is configured in the way that parking medium does not need to be checked at the automatic pay or cashier station.*

The following message appears after successful validation:

Template:

ParkTime: [time value]  
[Date]

Example:

ParkTime: 15:35  
11/01/2016

The validation message shows tariff-relevant time for calculation of parking fee.

## 3.5 Discount by Encoding Current Time

Parking fee is reduced through reducing duration of stay by changing tariff-relevant time to current time. After validation, amount of points set as Step Value are deducted from **point** parking facility account.

### Principle

Current time is encoded as tariff-relevant time to the ChipCoin. Duration of stay is calculated from this start, then.

The following message appears after successful validation:

Template:

```
ParkTime: [time value]
[Date]
```

Example:

```
ParkTime: 15:35
11/01/2016
```

The message after validation shows current time that is relevant for calculation of parking fee.

## 3.6 Tariff-switch Discount

Parking fee is calculated by cheaper tariff than the one before validation. After validation, amount of point set as Step Value are deducted from **point** parking facility account.

### Principle

Validation changes card class in the *Class* field in ChipCoin. In the parking facility, the card class is assigned to cheaper tariff. This is possible only when class value is greater than 0 and is correctly assigned through the *Tariff Management* in the parking facility.



*If the ChipCoin was validated to the tariff-switch discount it cannot be validated any more. After repeated attempt, a warning message appears.*



*Regarding general configuration of parking management system, card class values encoded after validation can be only one-digit numbers, i.e. from 1 to 9. This means that only nine tariffs can be configured for validation in a parking facility.*

The following message appears after successful validation:

Template:

```
Tariff modific.:
[Points]
```

Example:

```
Tariff modific.:
001
```

After validation, amount of points that were deducted from the point parking facility account is displayed.

## 4 Device Configuration and Deployment

The shop validator PVT40/C is delivered without configuration required for granting desired parking discounts. The device is configured through service menu and ChipCoin or transponder card medium with encoded parking discount. 20 different parking facilities can be configured in a shop validator.

Configuration of the PVT40/C is carried out in the following steps:

- General configuration of the PVT40/C device
- Encoding parking facility account data to ChipCoin or transponder card at the manual sales device or *entervo Cashier* station
- Setting a shop owner account in shop validator

### 4.1 Connecting to Power Supply

The PVT40/C device is powered via an external power supply through multipoint connector. No internal battery can be used as a main power supply.

After the device has been plugged into a wall outlet, display indicates that ChipCoin can be placed on the PVT40/C.

### 4.2 Initialisation of the Device

To prepare the PVT40/C for configuration, deletion of existing configuration data is required:

- 1 Press the **Menu** button, and then select **Service** pressing the UP or DOWN buttons.
- 2 Press the **Enter** button. A new window for entering password appears.
- 3 Enter **1111** by pressing the UP or DOWN and **Next** buttons.



***1111** value presents default password by factory setting. It can be changed. For more information, see "Changing Service Password" on page 20.*

- 4 Press **Enter** to confirm password. A service menu appears.
  - 5 Select **Total Reset**.
- ✓ The device configuration is restored to factory settings.

### 4.3 Basic Configuration

Basic configuration involves setting of the following parameters:

- Language
- Time and date
- Rejection time
- Changing service password

### 4.3.1 Language Setting

At this moment, only English user interface is available so that setting language is *not* needed.

### 4.3.2 Time and Date Setting

Time resets after unplugging the power supply.

This is how to set system time and date:

- 1 Press **Menu**, and then select **Set Clock** by pressing the UP or DOWN buttons.
  - 2 Press **Enter**. A new window for entering time appears.
  - 3 Enter *time* values using the UP and **Next** buttons, and then press **Enter**.
  - 4 Enter *date* values using the UP and **Next** buttons, and then press **Enter**.
- ✓ Time and date are displayed in the upper-left and upper-right corners of display.



*Wrong device time causes problems while discount by encoding current time is granted.*

### 4.3.3 Rejection Time Setting

The PVT40/C device can reject to re-encode ChipCoin after a parking discount has been already encoded to this medium. The medium is rejected only on the shop validator that has encoded the discount.

Time after that the shop validator rejects already-encoded media can be set as follows:

00 = discounted ChipCoin can be re-encoded without time limits

01 – 30 = amount of minutes after which discounted ChipCoin will be rejected

For distinct identification, EPAN of the ChipCoin parking medium is used.



*In case of non-zero reuse time, all encoded ChipCoin EPANs are stored on shop validator. If the device is switched off all identification data about encoded ChipCoins get lost and the device can encode them again.*

Follow these steps to set rejection time:

- 1 Press the **Menu** button, and then select **Service** pressing the UP or DOWN buttons.
- 2 Press the **Enter** button. A new window for entering password appears.
- 3 Enter **1111** by pressing the UP or DOWN and **Next** buttons.



***1111** value presents default password by factory setting. It can be changed. For more information, see "Changing Service Password" on page 20.*

- 4 Select **Time of Rep.**
  - 5 Enter a value from 00 to 30 (minutes) using the UP and **Next** buttons, and then press **Enter**.
- ✓ Time for rejection of already-encoded ChipCoins is set.

#### 4.3.4 Changing Service Password

Default service password is 1111. To change it, follow these steps:

- 1 Press the **Menu** button, and then select **Service** pressing the UP or DOWN buttons.
  - 2 Press the **Enter** button. A new window for entering password appears.
  - 3 Enter **1111** by pressing the UP or DOWN and **Next** buttons.
  - 4 Select **Password**.
  - 5 Enter a desired number, and then press **Enter**.
- ✓ Password was changed.



*Remember your password! If lost, software update procedure must be taken. Turning the PVT40/C device off does not restore default password value to 1111.*

## 4.4 Encoding Parking Facility Account Data

Deployment of the PVT40/C device requires setting of parking facility account (hereinafter called "account"). It is conducted with the transfer card, i.e. one of the value cards listed in "Overview of Transfer Cards", that is encoded by way of the manual sales device.

Encoding procedure represents creating a value card by means of ChipCoin or transponder card while account data (car park owner number and facility code) with value credit are being encoded to a transfer card. This is described in "Encoding Account Data" on page 21.

### 4.4.1 Overview of Transfer Cards

Creation of parking facility account requires to transfer account data from manual sales device or *entervo Cashier* station where it is encoded to the shop validator PVT40/C where it is loaded. This data transfer is provided with a transfer card.

The following table covers all types of parking cards that can be used for the data transfer:

S&B Card Type	Card Subtype	Card Types	Type of Parking Discount
6	0	Money value card	Money value

S&B Card Type	Card Subtype	Card Types	Type of Parking Discount
6	1	Time value card	Time value
6	2	Point value card	Point value
6	4	Money value card with control function	Money value
6	5	Time value card with control function	Time value
6	6	Point card with control function	Point value
6	7	Money value card for single use	Money value
6	8	Time value card for single use	Time value
6	9	Point card for single use	Point value

#### 4.4.2 Encoding Account Data

Encoding account data is creating a value card – here, so called transfer card - with specific credit. This procedure is conducted at the manual sales device by way of the card types listed in "Overview of Transfer Cards" on page 20.

**To encode account data, follow these instructions:**

At the manual sales device or through the *entervo Cashier* application, create a value card using type and amount of credit desired by shop owner (e.g. 601 for time value card).

For more information how to produce value cards with the *entervo Cashier*, see the *entervo Cashier: Graphical User Interface* manual.



*While encoding data, identification data such as owner number and facility code are encoded to the transfer card.*

- ✓ Account data are encoded to ChipCoin or transponder card which can be used for creation of a parking facility account.

**In the parking system with less than 10 shops, encode data for point tariff-switch account following these steps:**

- 1 Use manual sales device or start the *entervo Cashier* application.
- 2 Create a point/percentage value card, i.e. 602, 606 or 609 cards, while entering amount of credit desired by shop owner in the **Point Balance** box.



*0.1 point value in the entervo Cashier is equal to one point in the PVT40/C. It means that if you want to top up 10 points enter 1 in the entervo Cashier.*



The **maximum amount of points** that you can top up through the entervo Cashier is 99.9 which represents 999 points in the account in the PVT40/C device.

- 3 In **Electronic Purse**, enter a card class from 1 to 9.



This is a range of digits permitted by default. From this reason, maximum nine different tariff discounts can be configured following this procedure.

- ✓ Account data are encoded to ChipCoin or transponder card which can be used for creation of a parking facility account.

**In the parking system with 10 and more shops, encoding point tariff-switch account requires the following:**



The PVT40/C validator is able to read and write card classes from 1 to 999. It means that there may be configured tariff-switch accounts for 999 different shop owners in a parking system.

Before encoding accounts for 10 or more validators in a parking system, additional articles matching point/percentage value cards that have unique card classes must be created in parking system.

Creation of new articles is *not* a trivial user procedure. From that reason, it requires intervention of the S&B service personnel.



Each article with a unique card class is used for one shop while creating a point/percentage value cards. The card class represents unique identifier for the shop.

This is how to create transfer card for tariff-switch account:

- 1 Use manual sales device or start the *entervo Cashier* application.
- 2 Create a point/percentage value card using article assigned to a specific shop owner, while you enter amount of credit desired by the shop owner in the **Point Balance** box.

- ✓ Account data are encoded to ChipCoin or transponder card which can be used for creation of a parking facility account.

## 4.5 Creating Parking Facility Account



The maximum amount of accounts in the PVT40/C device is 20.

Creation of an account is conducted by use of ChipCoin or transponder with encoded data in two steps:

- Loading account data and credit to the PVT40/C
- Configuration of parking facility account

### 4.5.1 Loading Account Data

To load account data from transfer medium to shop validator, keep the following instructions:

- 1 Press the **Menu** button, and then select **Service** pressing the UP or DOWN buttons.
  - 2 Press the **Enter** button. A new window for entering password appears.
  - 3 Enter service password (default value is 1111) by pressing the UP or DOWN and **Next** buttons.
  - 4 Select **Load.Ref.** A message appears.
  - 5 Place the transfer medium in a parallel way onto the white ChipCoin mark. A message about successful loading appears.  
Credits are transferred to account and amount of credits in the transfer medium is zero.
- ✓ A new parking facility account was created. To check account details and balance in the account, follow instructions in "Checking Account Details" on page 26.

### 4.5.2 Configuring Parking Facility Account

The last step of creating a parking facility account is configuration of the following account parameters:

- Step Value:** Amount of parking discount (in minutes, money value or points) that is subtracted from account after validation.
- Pay-Bit:** If Yes, ChipCoin with zero parking fee can be used at the exit without making payment at the payment terminal.
- Shortage:** If this amount of credits in the account is reached warning about low account balance appears.
- Ref. Mode** (Reference Mode): This parameter defines a subtype of time or point discount.
  - **Time-value account** as Time (time credits are provided, i.e. time discount) and Tariff (discount by encoding tariff-relevant time, i.e. discount by encoding pre-time)
  - **Point-value account** as CurTime (discount by encoding current time as tariff-relevant time) and Class (changing a class to class with cheaper tariff, i.e. tariff-switch discount)

**To configure account in the validator, follow these steps:**

- 1 Press the **Menu** button, and then select **Service** pressing the UP or DOWN buttons.
- 2 Press the **Enter** button. A new window for entering password appears.
- 3 Enter service password (default value is 1111) by pressing the UP or DOWN and **Next** buttons.
- 4 Select and press **Step Value**.

- 5 Select **Step Value**, and then enter amount of parking discount by using the UP and **Next** buttons (amount of money as decimal number, time in minutes and point as integer).
- 6 Select **Pay-Bit**, and then enter **Yes** (parking medium can be used at the exit without payment at the payment terminal) or **No** (parking medium must be read at the payment terminal even if no parking fee shall be paid).
- 7 Select **Shortage**, and then enter limit amount of credits when a warning about low balance appears.
- 8 Select **Ref. Mode**. This step applies only for time-value and point-value account.

For *time-value account*, select **Time** (for provision of time credits) or **Tariff** (for encoding pre-time, i.e. tariff-relevant time).

For *point-value account*, select **CurTime** (for encoding current time as tariff-relevant time) or **Class** (for a class with cheaper tariff).

- 9 Press **Enter** to save the settings.
- ✓ The account is now fully configured and ready for configuration test.

## 5 Configuration Test

The test verifies if shop validator was configured correctly. This can be conducted by validation of a ChipCoin or transponder card which is then followed by evaluation.

### This is how to check validation process:

- 1 Validate a valid ChipCoin or transponder card with shop validator. See list of valid card types in "Discount Card Types" on page 15.
  - 2 Follow the screen if a message about successful validation appears.
- ✘ If not, consider error message and repeat device configuration. For more information about error messages, see "Troubleshooting" on page 34.

### This is how to check configured parking discount through the PVT40/C device:

- 1 Check parking medium through the PVT40/C shop validator following instructions in "Checking Parking Medium" on page 29.
  - 2 Check if card type with subtype and time or money credit corresponds with required values.
- ✘ If not, configuration must be repeated.

### This is how to check configured parking discount through the *entervo Cashier* application:

- 1 Start the *entervo Cashier* application.
  - 2 Click **Read ticket** and scan the validated parking medium. A new window with complete information about the medium appears.
  - 3 Check if card type with subtype and parking discount correspond with required values.
- ✘ If not, configuration must be repeated.

## 6 Account and Parking Medium Handling

This chapter describes all practices with existing parking facility account and parking medium.

### 6.1 Checking Account Details

This is how to check details about account configured in shop validator PVT40/C:

- 1 Press **Menu**, and then select **Rem. Value** by pressing the UP or DOWN buttons.
  - 2 Press **Enter**. A new window with name of an account appears.
  - 3 Press the **Prev** or **Next** buttons to select desired account, and then press **Enter**.
- ✓ A new window appears. You can see details about account such as:
- Account identification
  - Balance in the account
  - Amount of provided discounts

### 6.2 Topping up Account

If the account balance in the PVT40/C device is getting low a message about immediate reloading appears. Now, topping up account is required.



*Top-up requires a service password. As shop owner does not know a service password car park operator has to be called to top up the account by service personnel.*

#### 6.2.1 Topping up Money and Time Accounts

This is how to top up money and time parking facility accounts:

- 1 Use manual sales device or start the *entervo Cashier* application.
- 2 Create a value card using type and amount of credit desired by shop owner (e.g. 601 for time value card).



*The **maximum money** account balance in the PVT40/C device is **9999,99 of currency units**. If bigger amount is loaded to shop validator an error appears.*

*The **maximum time** account balance is **99999 hours**. Note that you can create a time value transfer card with maximum time value of 99 days 23 hours and 59 minutes in the *entervo Cashier* application.*

For more information how to produce value cards with the *entervo Cashier*, see the *entervo Cashier: Graphical User Interface* manual.

- ✓ A value credits can be loaded to shop validator, now.
- 3 On the shop validator, press **Menu**, select **Service**, and then press **Enter**.  
A new window for entering a password appears.
- 4 Enter a service password (default value is 1111) by pressing the UP or DOWN and **Next** buttons.
- 5 Select **Load Ref.** A message appears.
- 6 Place the transfer medium in a parallel way onto the white **ChipCoin** mark. A message about successful loading appears.
- ✓ The balance was topped up. To check balance in the account, see instructions in "Checking Account Details" on page 26.

## 6.2.2 Topping up Point Account

To encode data for point account, follow these steps:

- 1 Use manual sales device or start the *entervo Cashier* application.
- 2 Create a point/percentage value card, i.e. 602, 606 or 609 cards, while entering amount of credit desired by shop owner in the **Point Balance** box.



*0.1 point value in the entervo Cashier is equal to one point in the PVT40/C. It means that if you want to top up 10 points enter 1 in the entervo Cashier.*



*The **maximum amount of points** that you can top up through the entervo Cashier is 99.9 which represents 999 points in the account in the PVT40/C device.*

- 3 If you want to top up *tariff-switch* point account enter a card class from 1 to 9 in **Electronic Purse**. The card class must match the class in the account in the shop validator.  
If you top up point account for *current-time* discounts enter 0 in **Electronic Purse**.



*If the Electronic Purse box is not available while creating a point card the Base Data Maintenance has to be used to configure displaying it.*

- ✓ A value credits can be loaded to shop validator, now.
- 4 On the shop validator, press **Menu**, select **Service**, and then press **Enter**.  
A new window for entering a password appears.
- 5 Enter a service password (default value is 1111) by pressing the UP or DOWN and **Next** buttons.

- 6 Select **Load Ref.** A message appears.
  - 7 Place the transfer medium in a parallel way onto the white **ChipCoin** mark. A message about successful loading appears.
- ✓ The balance was topped up. To check balance in the account, see instructions in "Checking Account Details" on page 26.

## 6.3 Removing Account

There are some situations when it is useful to remove an account:

- Amount of existed accounts achieves number of 20 and a new one is to be created.
- There is an account that is not needed any more. Removal of this account makes administration of accounts more easy.
- Type of discount has changed in a parking facility and a new type has to be set.

This is how to remove a parking facility account from the shop validator:

- 1 At the manual sales device or *entervo Cashier* station, create a transfer card with value type matching the value in account. See list of transfer cards that you can create in "Overview of Transfer Cards" on page 20.



*This transfer card must be created in the parking facility that is assigned to the account.*

- 2 Press **Menu**, then select and press **Service**, enter service password, and then select and press **Unload Ref.**
- 3 Place the transfer medium in a parallel way onto the white **ChipCoin** mark. A message about successful deleting an account appears.

- ✓ The account was removed from the device.



*The remaining account value is credited to transfer card which can be used to reclaim money from parking operator.*



*Note that reading point value of the point value card through the *entervo Cashier* and manual sales device (POS) differs. For example, there were 10 points in an account that was removed from shop validator. These points will be reclaimed from parking operator. While reading the point value card, 10 points is displayed as 10 points in the *entervo Cashier* application but as 100 at the POS.*

## 6.4 Resetting Discount Counter

While checking account details, you see amount of discounts that were granted through the account. You can see this discount counter in each account separately. For more information about checking discount counter, see "Checking Account Details" on page 26..

This is how to reset counters in all account profiles at once:

- 1 Press the **Menu** button, and then select **Service** pressing the UP or DOWN buttons.
  - 2 Press the **Enter** button. A new window for entering password appears.
  - 3 Enter service password (default value is 1111) by pressing the UP or DOWN and **Next** buttons.
  - 4 Select **Set Ref.=0**, then press Enter, and then enter the service password (1111 or other one that was set).
- ✓ A message about successful resetting appears. The values of **Number of refund** are zero in all existed accounts.

## 6.5 Checking Parking Medium

This is how to view all details of a ChipCoin or transponder card by use of shop validator:

- 1 Press **Menu**, select **Read Card** by pressing the UP or DOWN buttons, and then press **Enter**. Device is ready for reading a parking medium.
  - 2 Place the ChipCoin or transponder card in a parallel way onto the white **ChipCoin** mark in the centre of device.
- ✓ Detailed information about the parking medium appears. If the information is listed on more pages use the UP or DOWN buttons for reading.



*The PVT40/C shop validator can read only card types that are used for validation and transfer. They are listed in (see "Overview of Transfer Cards", page 20) and (see "Discount Card Types", page 15).*

## 7 Software Update



*Only the Elatec Reader/Writer firmware can be updated. Updating the S&B software that provides a graphic user interface is not available at this moment. Version of the S&B software can be displayed as described in "Check S&B Firmware Version".*

Software update of the *Elatec Reader/Writer* firmware can be carried out only locally – through connection of a host computer to shop validator with serial COM cable. The following is required:

- Serial COM cable with power cord (art. no.: 04208750)
- Elatec AppBlaster* programme (It can be downloaded on the <http://www.elatec-rfid.com/download-center/> web page.)
- A .bix file of the *Elatec Reader/Writer* firmware (It can be downloaded from the Update Note; search "PVT 40 Chipcoin Discounter" module.)

### 7.1 Check S&B Firmware Version

To check S&B software version that provides a graphic user interface, follow these instructions:

Press the **Menu** button, then select **Version**, and then press **Enter**.

- ✓ Information about software version appears.

If you need to check a complete information about firmware version before update follow these steps:

- 1 Press **Menu**, select **Service**, and then enter a service password (default value is 1111). A new menu is displayed.
- 2 Select **Firmware**, and then enter **0000**. A new menu appears.
- 3 Select **Elatec**, and then **FW version**.

- ✓ Information about firmware version appears.

### 7.2 Update Process of the Elatec Reader/Writer Firmware

In order to update the *Elatec Reader/Writer* firmware, follow these instructions:

- 1 From <http://www.elatec-rfid.com/download-center/> web page, download TWN4DevPackxxx file. In the software package, select the AppBlaster.exe file.
- 2 Unplug the PVT40/C device from mains, and then unplug power cord from female socket on the rear side of device. Pull the male connector gently and straight to avoid damage to the female connector.



Fig. 6: Plugged connector



Fig. 7: Unplugged connector

- 3 Plug a male connector of serial COM cable (combined with power cord) into the female socket. Be aware of additional element that ensures right connection.
- 4 Plug the serial female connector to host computer or use USB connection adapter.
- 5 Connect the PVT40/C device to mains to turn the PVT40/C device on.
- 6 Press the **Menu** button, select **Service**, and then enter a service password (default value is 1111). A new menu is displayed.
- 7 Select **Firmware**, and then enter **0000**. A new menu appears.
- 8 Select **Elatec**, and then **Bootloader**. New messages are about starting and running the software.

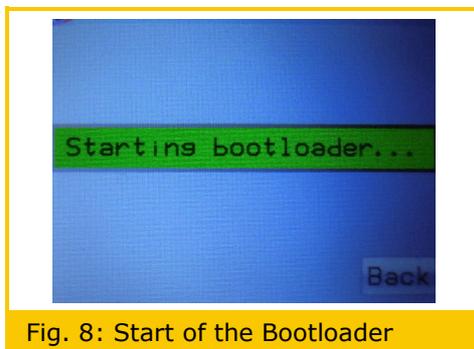


Fig. 8: Start of the Bootloader

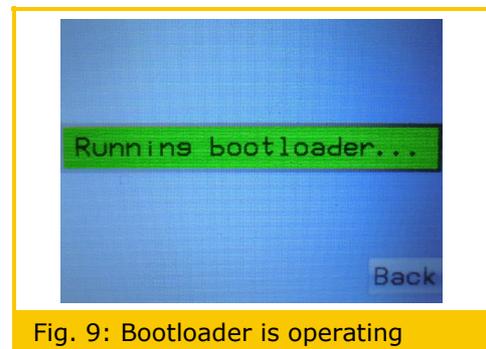
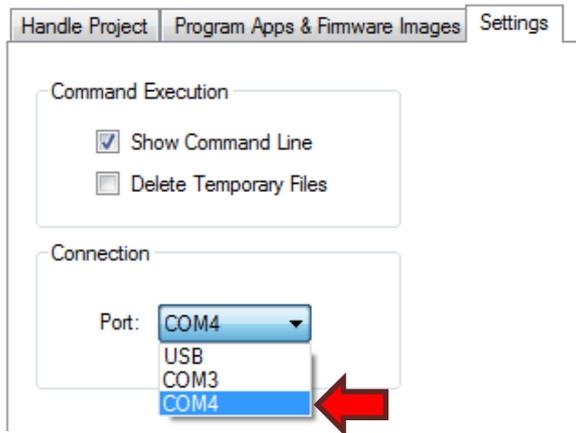
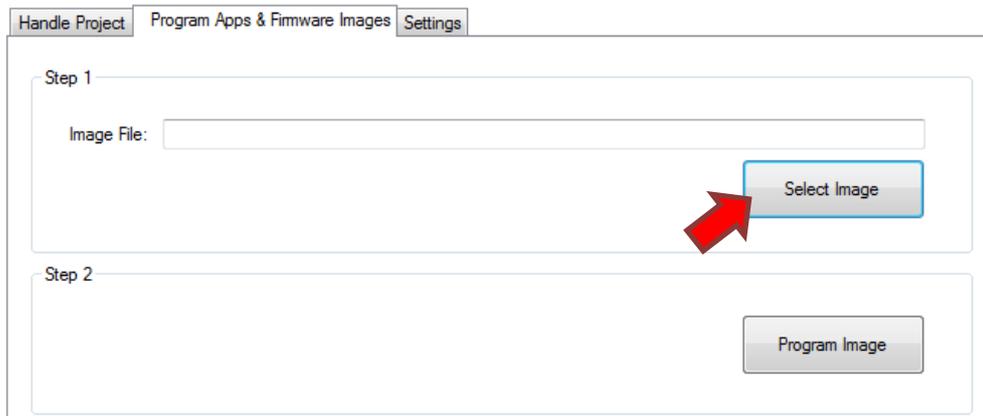


Fig. 9: Bootloader is operating

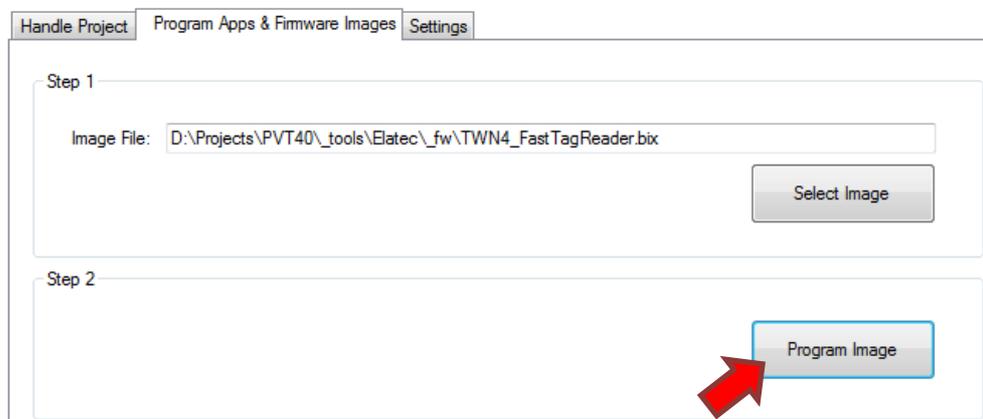
- 9 On the host computer, launch the *Elatec AppBlaster* programme.
- 10 Click the **Settings** tab and in the **Connection** area, in the **Port** list, select serial COM port through that the device is connected to the host computer.



- 11 In the Update Note, in the "PVT 40 Chipcoin Discounter" module section download a required .bix file.
- 12 Click the **Program Apps & Firmware Images** tab, and then click **Select Image**. A new window appears.



- 13 Select firmware image file (i.e. .bix file), and then click **OK**.
- 14 Click **Program Image** to start the software update.



- 15 Wait until the **Programming...** message disappears.

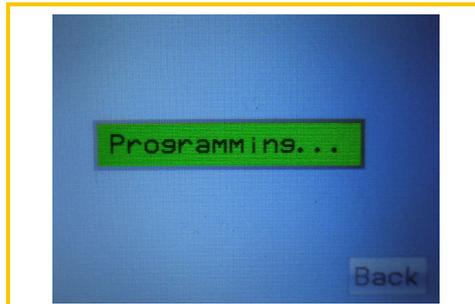


Fig. 10: Update is running

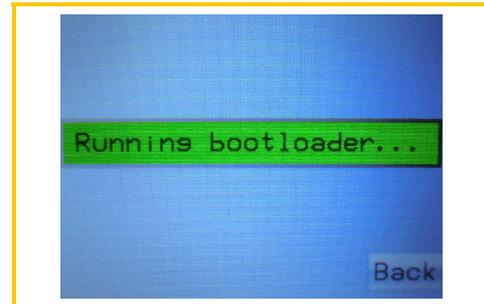


Fig. 11: Update has been finished

- ✓ Successful update ends with the **Running bootloader...** message. Now, new *Elatec Reader/Writer* firmware is installed in the shop validator.

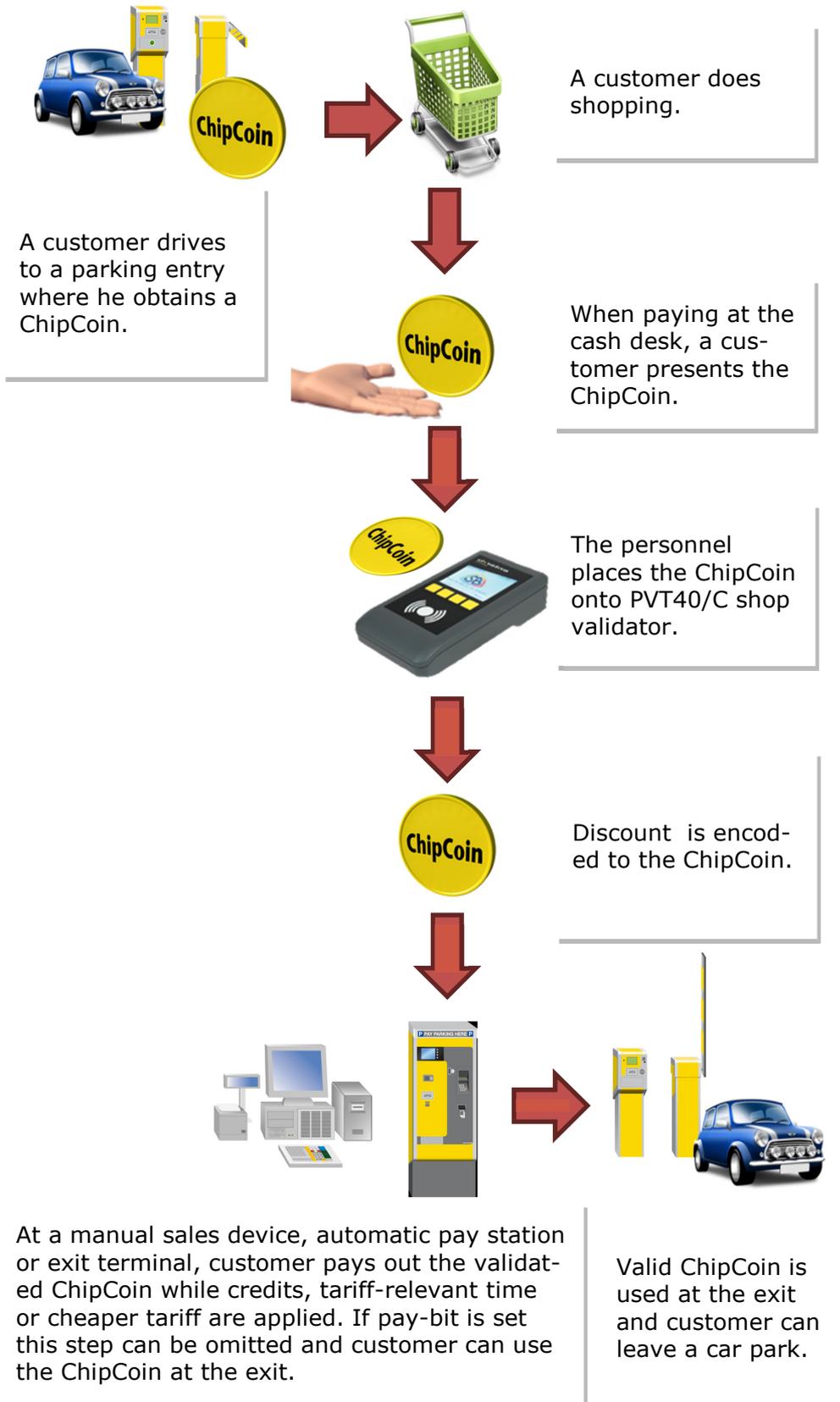
## 8 Troubleshooting

This chapter summarises all messages indicating problems that can occur while manipulating with a shop validator PVT40/C. The following table comprises all errors that can be indicated by shop validator.

Error Text	Description and Solution
No owner data indicated!	There is no account in shop validator because: <ul style="list-style-type: none"> <li><input type="checkbox"/> No account has been created yet.</li> <li><input type="checkbox"/> All accounts are without relevant data.</li> <li><input type="checkbox"/> All accounts have been deleted by resetting to default settings.</li> </ul>
Value card subtype not permitted!	Only specific value cards (0,1, 2, 4, 5, 6, 7, 8, 9) can be used with the PVT40/C. For more information, see "Overview of Transfer Cards" on page 20.
No value card!	While transferring credit from a parking medium, this parking medium shows up to be <i>not</i> permitted.
Overflow of value range while loading!	Value range in account was exceeded and loading credit was interrupted. No card data are changed.
No more owner data memory available!	The maximum number of 20 accounts has been reached in the shop validator.
Owner data not found!	During validation, a parking medium does <i>not</i> match to any of accounts. Identification data are <i>not</i> corresponding.
Owner data found, wrong currency or exp. detected!	In case of the money value discount, the shop owner has been found but the currency defined in the parking medium does <i>not</i> match.
Not enough time credit for refund!	Balance of time credits in the account is too low to provide a discount.
Not enough money credit for refund!	Balance of money credits in the account is too low to provide a discount.
Error while encoding. Repeat procedure!	While transferring data from shop validator to parking medium, an error occurs. No card data are changed.
Type of refund different from owner entry!	Money value discount is not applied because type of refund in account does <i>not</i> match to that one in parking medium. Even if the shop owner is correct.
ChipCoin was already used!	Repeated validation of ChipCoin is rejected while a rejection time is set.

Error Text	Description and Solution
Not present in installation!	Parking medium is <i>not</i> present in the parking facility, i.e. there is a zero value ("not present") in the "present in installation" field.
ChipCoin is cancelled!	Parking medium is not permitted for validation (0xFF identification).
Card type invalid!	Type of parking medium is <i>not</i> valid for validation. All permitted types are listed in "Discount Card Types" on page 15.

## 9 Course of Discounted Parking



## 9.1 Validation Process

This chapter is dedicated to validation of a ChipCoin or transponder card obtained from customer at cash desk. A complete process of discounted parking is captured in "Course of Discounted Parking" on page 36.

The following procedure must be kept to validate a ChipCoin or transponder card with the PVT40/C:

- 1 Make sure that device shows message appealing you to use a ChipCoin or transponder card. Place the ChipCoin or transponder card in a parallel way onto the white ChipCoin mark in the centre of device.
  - 2 Device encodes a parking discount. A final credit - also after multiple discounting, tariff-relevant time or amount of points subtracted from account is displayed.
- ✓ Now, validation has successfully completed and the ChipCoin or transponder card can be returned to a customer.

# 10 Reporting

The PVT40/C shop validator application enables reporting so that operating personnel has comprehensive overview of parking medium details, parking facility accounts and operational processes such as top-up, removing or creating account.

There are three types of information that are displayed by the PVT40/C software:

**Parking medium details**

Detailed information about parking medium that are encoded in this medium. Only details about parking media listed in "Discount Card Types" and "Overview of Transfer Cards" can be displayed.

Procedure of displaying the details is described in "Checking Parking Medium".

**Parking facility account details**

Brief information about account identification, remaining credits and amount of discounts that have been provided.

Procedure of displaying the details is described in "Checking Account Details".

**Details about processes**

After each validation or another operation, a quick information about finished process or operational error is displayed. A complete list of error messages is listed in "Troubleshooting".

# 11 Maintenance and Servicing

The PVT40/C device is due to its construction a maintenance-free device and requires only cleaning LCD display, general check of functionality and cleaning the surface of housing.

## 11.1 Maintenance Survey

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

<b>PVT40/C Validator</b>	Maintenance	Interval	Cyclic Maintenance
LCD display	○	at need	
General maintenance	○	every 6 months	

○ 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: <div style="border: 1px solid black; height: 80px; margin-top: 5px;"></div>				

### Maintenance list:

#### 1. LCD display

Switch the device off	Tick here and enter your comments:
Clean foil over display	
Dry up the foil	

#### 2. General maintenance

Clean surface of device	Tick here and enter your comments:
Check functions	

## 12 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.

## 13 Certifications and Conformity

The *Elatec TWN4 Reader/Writer* device conforms to the following standards:

RF: EN 300 330-2 V1.5.1

EMC: EN 301 489-1 V1.8.1

Human exposure: EN 50371:2002

Safety: EN 60950-1:2006 + A11:2009 + A1:2010

EN 302 291-2 V1.1.1

EN 301 489-3 V1.4.1

### **Worldwide certifications**

WEEE, RoHS, R&TTE, CE (Europe), FCC (USA), IC (Canada), ACA (Australia / New Zealand), MIC (Japan), KCC (Korea), ANATEL (Brazil), CFT (Mexico), ICASA (South Africa), EAC (Russia), India, Israel, Thailand, Venezuela

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