



Operating manual

HDA eco Box

Automatic Dispenser

Item No.: 110 500 700

Translation of the
original operating manual

Important!

The operating manual is always to be read before commissioning the equipment. No warranty claim will be granted for faults and damage to the equipment arising from insufficient knowledge of the operating manual.

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Service Hotline	+49 1805 900 301
Repair Service	+49 1805 900 302

service@tecalemi.de

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1 Safety instructions

The device is a state of the art piece of equipment and has been constructed according to recognised safety specifications. It is nevertheless possible that use of the device will present hazards to the operator or to third parties, or may damage the device or other property. It is therefore essential to act in accordance with these safety instructions, and in particular with those sections identified as warnings.

Warning notices and symbols

In the operating manual, the following signs are used for highlighting important information.



Special information for economical usage of the equipment.



Special information or 'do and do not's for damage prevention.



Information or 'do and do not's for the prevention of damage to persons or equipment.

Intended use



The device shall only be used if it is in specified condition. The device shall only be used for its intended usage, in compliance with all relevant safety regulations, with awareness of the potential risks, and according to the operating manual. Any faults that may impair the safety must be rectified immediately.



The device and its components are only to be used for handling the liquids listed and the purpose described. Using the machine for any other purpose would constitute inappropriate use. The manufacturer is not responsible for any loss arising as a result of this. The risk for this is borne only by the operating company.

Organisational measures



This operating manual should always be available at the site of operation! Each person who is involved with the assembling, commissioning, maintenance and operation of the equipment must have read and understood the entire operating manual. The type plate and the warning notices attached to the device have to be observed and maintained in a fully readable condition.

Qualified personnel



The person operating, maintaining and assembling must be appropriately qualified for their work. The areas of responsibility, competences and supervision of the personnel must be precisely regulated by the operating company. If the operators do not have the required knowledge, they must be trained and instructed. The operating company must also ensure that the contents of the operating manual are properly understood by the operator.

Waters protection



The device is designed to handle water hazardous substances. The relevant local and national regulations to protect the environment have to be fulfilled at the operating place.

Hydraulics



Only persons with special knowledge and experience with hydraulic systems are permitted to work on hydraulic parts and equipment. All lines, hoses and screw joints should regularly be checked for leaks and visible external damage. Any damage must be rectified immediately. Pressurised fluid can cause injuries and fire. During handling oils, greases or other chemical substances the relevant local and national safety regulations for the product must be observed!

Maintenance and Service



For maintenance works at devices for flammable and/or water endangering substances consider the regulations of the water resources law. Use only authorized service companies.

Before starting any kind of maintenance ensure that all fuel lines are pressureless, completely empty and aerated.

Any changes, modifications or additions to the device are prohibited without consent of the manufacturer. Spare parts have to fulfil the specifications of the manufacturer. This is only guaranteed by original spare parts from the manufacturer.

Electric power



Only qualified electrician or trained persons under the guidance and supervision of a qualified electrician according to electro-technical guidelines are permitted to work on the electrical equipment. Before starting any kind of maintenance or repair work ensure that the device is de-energised.

2 Technical description

2.1 Intended use

The Wonder Box is designed as a Fluid Inventory Control System for use in industry, workshops, filling stations and similar facilities.
It is intended for the control of dispensing during the refuelling of vehicles with liquid and pumpable operating media.

! The installation and operation of the Wonder Box in explosion hazardous areas is not permitted. This would constitute a risk of explosion!

2.2 Description

The Wonder Box consists of the HDA eco automatic dispenser, which is mounted in a sheet metal housing.

The built-in HDA eco automatic dispenser is optimised for the administration of small and medium-sized vehicle fleets and enables the administration of up to 2000 users/vehicles.

Optional, additional components to create an entire tank system are the feed pump, the flow meter, the dispensing hose with an automatic nozzle and, if applicable, an analogous level probe or fill level switch for monitoring the level in the tank.

2.3 Permitted media

All liquid and pumpable operating media for refuelling vehicles.



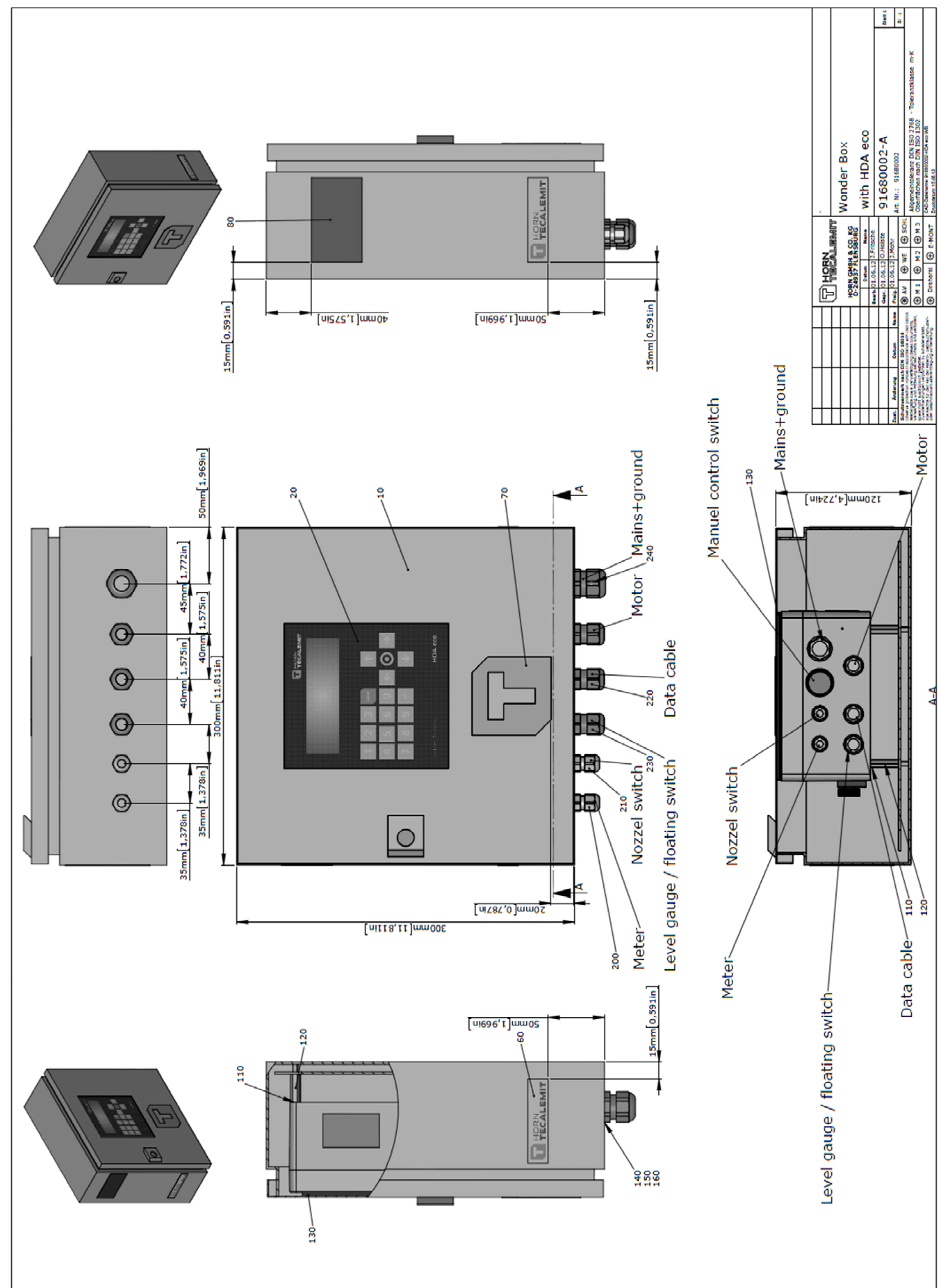
Please check the safety data sheet for your medium.

In the case that the medium generates explosion hazards, the user has to make sure that the used additional equipment (e.g. pump and meter) and the electrical and mechanical installation follows the national regulations of explosion protection.

2.4 Technical data

Dimensions (WxHxD)	300x300x120 mm
Voltage	230V / 50 Hz
Ambient temperature	-20°C bis 55°C
Protection class	IP54
Maximum switching current	6,2A
Weight	ca. 5,4 kg
Maximum pulse frequency for the external used flow meter	240 Hz
Maximum failure elevation of the used measuring equipment	
- for a flow meter	0,1%
- for a level sensor	1%

2.5 Dimensional drawing



2.6 Interfaces of the Wonder Box

2.6.1 Interface flow meter

Take care that the used combination of flow meter and pump fits to the HDA eco installed in the Wonder Box.

The HDA eco can only work with a maximum pulse frequency of 240 Hz.

To find out that the used equipment fits to the HDA eco please recheck the equipment with the following formulas:

Calculation of the pump for a given flow meter:

$$\text{Maximum flow rate of the pump} = \frac{14400}{\text{Pulse value of the flow meter}} \left[\frac{l}{min} \right]$$

The used value for the pulse rate needs the unit [pulse/l] for the calculation.

Calculation of the flow meter for a given pump:

$$\text{Maximum pulse value of the flow meter} = \frac{14400}{\text{Maximum flow rate of the pump}} \left[\frac{\text{pulse}}{l} \right]$$

The value for the flow rate needs the unit [pulse/l] for the calculation.

Calculation example to check the pump for a given flow meter:

Pulse rate of the flow meter: 53,95 pulse/l (FMOG100)

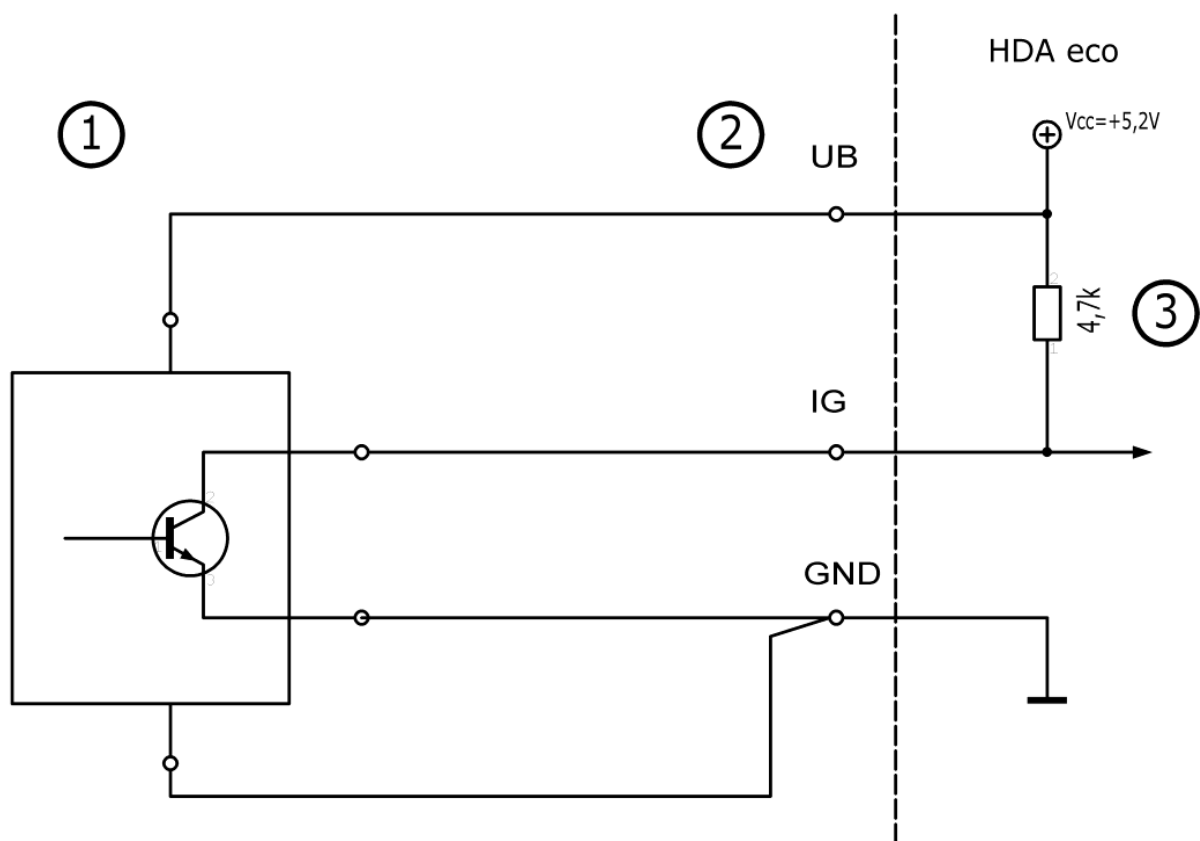
$$\text{Maximum flow rate} = \frac{14400}{\text{Pulse rate}} = \frac{14400}{53,95} = 266,9 \left[\frac{l}{min} \right]$$

Calculation example to check the flow meter for a given pump:

Maximum flow rate of the pump: 64 l/min

$$\text{Maximum pulse value} = \frac{14400}{\text{Flow rate}} = \frac{14400}{64} = 225 \left[\frac{\text{pulse}}{l} \right]$$

Connection of a flow meter (Typical application):



Explanation	
No.	Description
1	External flow meter
2	Connection clamp inside HDA eco
3	HDA eco internal

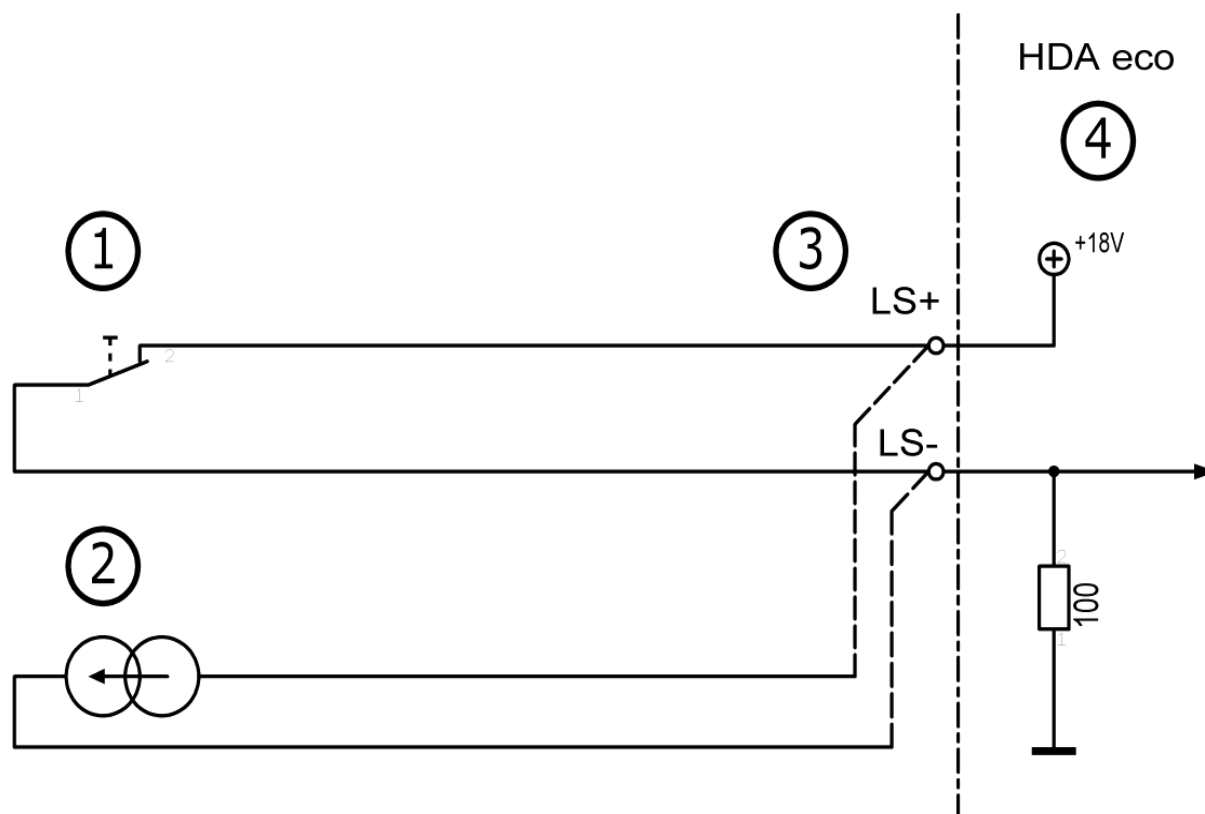
Specification		
Parameter	min.	max.
Operating voltage	4,9V	5,5V
Supply output current		50mA
Input voltage	-0,20V	5,5V
Pulse duration, "high" or "low"	1,5 ms	
Input pulse frequency		120Hz

Attention !
If an external power supply is used for the flow meter, the input voltage of the HDA eco **must not** exceed the values shown above. Otherwise, the device will permanently be damaged.

2.6.2 Interface level control

Connection of a level control:

Use either a level switch (1) or a level gage (2). Never use both parallel.



Explanation	
No.	Description
1	Level switch (nc)
2	Level gage (4-20mA)
3	Connection clamp inside HDA eco
4	HDA eco internal

Input configured for level gauge		
Parameter	min.	max.
Supply voltage	16V	22 V
Input current range	3mA	24mA

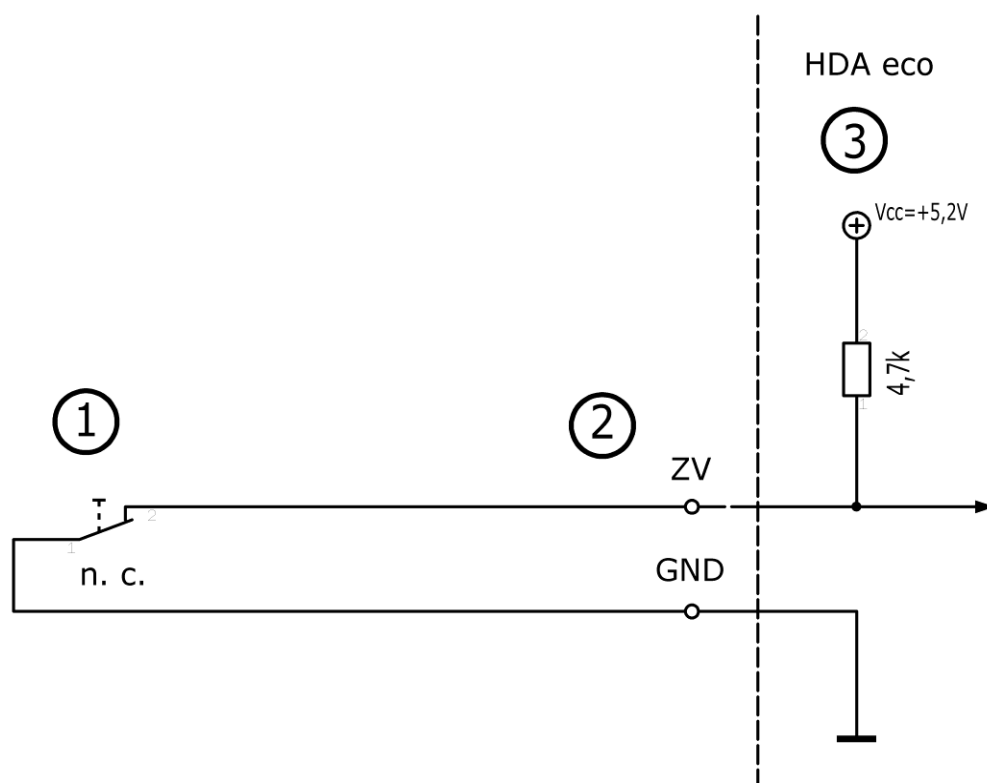
Input configured for level switch		
Parameter	min.	max.
Switching voltage		22V
Switching current	4.5mA	5.5mA

Please notice:

The input configuration for connection of a level gauge is an option and must be ordered separately!

2.6.3 Interface nozzle switch

Typical connection of a nozzle switch:



Explanation	
No.	Description
1	Nozzle switch
2	Connection clamp inside HDA eco
3	HDA eco internal

Input Nozzle switch		
Parameter	min.	max.
Switching voltage	5,5V	
Switching current		1.3 mA

Note:

Due to the low current, a reed switch is recommended.

2.7 Accessories

The following accessories are available for the Wonder Box:

Description		Article-No.
Adjustment kit	Wall mounting	233400156
RS422 interface	(Plug-in PCB; please indicate the serial number & year of manufacture of the dispenser when ordering for retrofitting)	233400170
RS232 interface		233400190
TAG	(Key for driver/vehicle identification)	233400200
USB TAG reader		233400081
USB stick with HD Manager eco (US Version)		616700001
HD Manager – basic version		233500351
HD Manager – full version		233500402
Float switch		233400165
Level probe interface	(Please indicate the serial number & year of manufacture of the dispenser when ordering for retrofitting)	233400160
Activation code fee	(activation by telephone when retrofitting the level probe)	233400470
Level probe 200 mbar	(Tank height max. 6 ½'; cable length 16 ½')	US224010000
Level probe 300 mbar	(Tank height max. 10'; cable length 16 ½')	US224020000
Level probe 500 mbar	(Tank height max. 16 ½'; cable length 23')	US224050000
Terminal box with pressure compensation filter	(for extending the cables of the level probes)	224061000

The right choice of the additional components like pumps or flow meters depends of the medium and the place of usage. For this please contact the HORN TECALEMIT Service.

Service Hotline +49 1805 900 301

or

service@tecalem.it.de

3 Assembly instructions

Before assembling and commissioning the device, check that the equipment is complete and undamaged.

Be aware and follow the regulations of health and safety.



Commissioning of incomplete or damaged equipment is not allowed!

3.1 Mounting of the Wonder Box

The Wonder Box must be fastened vibration-free to a load-bearing wall or bracket with 4 fixing screws suitable for the substructure. Alternative fixing options are stated in the list of accessories.

3.2 Place of installation

The Wonder Box is designed for installation inside buildings and outdoors. The installation location must be selected such that trouble-free operation and maintenance are possible. Take care of an ergonomic position. The display should be easily visible and the keypad easy to use. The housing door must be able to be opened without being impaired. Also respect the IP class of the Wonder Box by the selection of the place of installation.



Installation and operation of the Wonder Box in explosive areas is not permitted. This would constitute a risk of explosion!



The local and national regulations for waters protection and for plants for water hazardous substances must be observed. Also the local and national regulations for explosion protection must be observed when the medium make them relevant.

3.3 Temperature and humidity

The automatic dispenser may be operated at ambient temperatures from -20°C to +55°C.

Direct, longer periods of exposure to sunlight and condensing air humidity must be avoided.

3.4 Electric connection

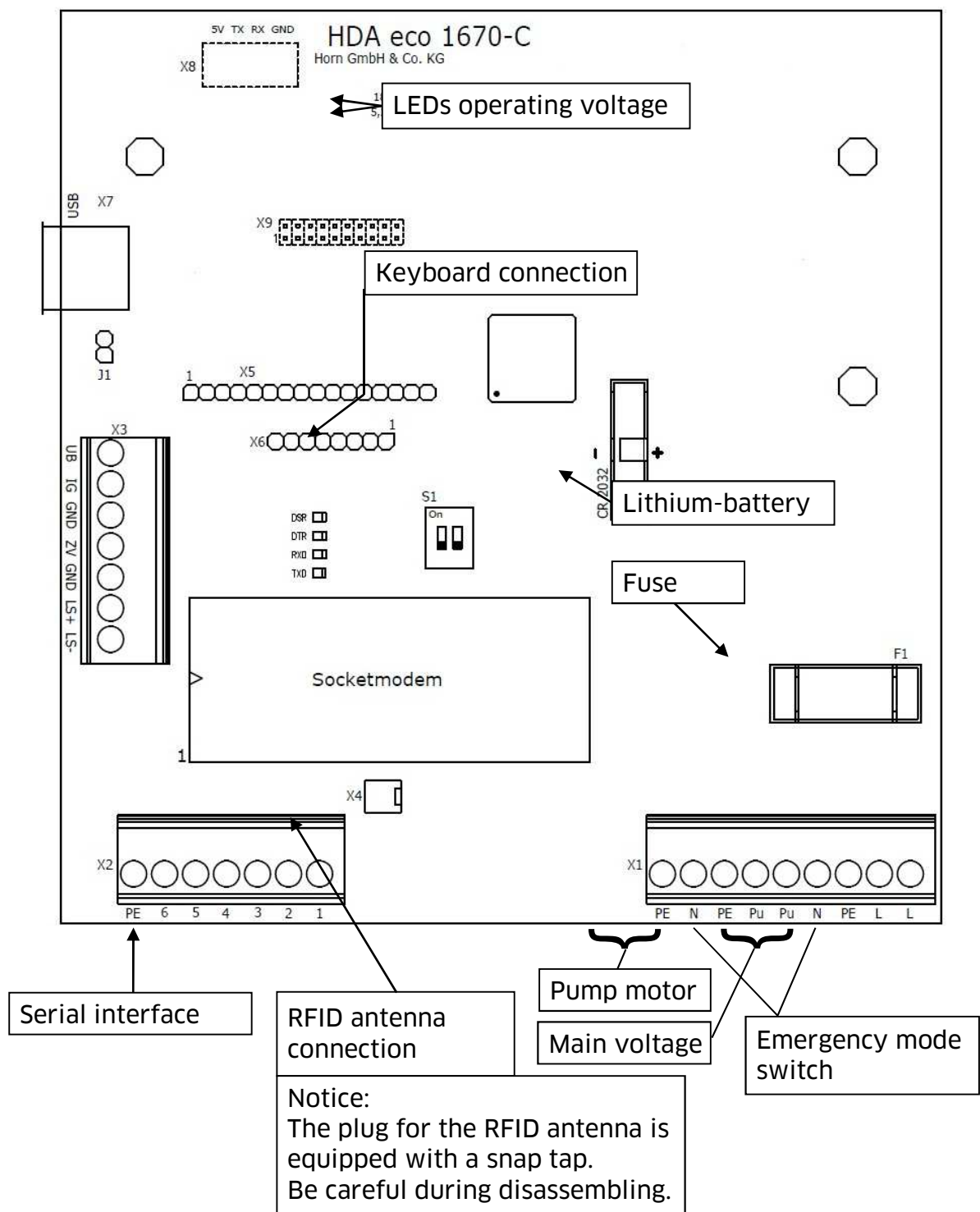
The automatic dispenser is operated on 230V / 50Hz. The power consumption is about 5 W. The maximum switching current is approx. 6.3 A.



Work on the electrical equipment of the device may only be carried out by a qualified electrician or by trained persons under the guidance and supervision of a qualified electrician according to electro-technical guidelines.

For trouble-free operation, an electrical connection from the distribution box with residual current circuit breaker must be selected!

The electrical connection takes place according to the connection diagram on the next page.



Terminal strip	Terminal	Signal	
X1	L	Mains voltage - live	
	PE	Mains voltage - protective earth	
	N	Mains voltage - neutral	
	Pu	Switched phase for motor	
	2. L und Pu	Emergency mode switch	
X2	Socket modem	RS422	RS232
	1	GND	GND
	2	TX-	DSR
	3	TX+	DTR
	4	GND	GND
	5	RX-	RX
	6	RX+	TX
	PE	Earth terminal	
X3	UB	Pulse generator operating voltage +5.2V	
	IG	Pulse input	
	GND	Pulse generator ground	
	ZV	Enabling contact (potential-free contact)	
	GND		
	LS +	Sensor (4-20 mA) operating voltage + or float switch	
	LS -	Sensor (4-20 mA) operating voltage - or float switch	
X4	RFID antenna connection		
X5	Display connection		
X6	Keyboard connection		
X7	USB port		
X8	Not used		
X9	Not used		

Switch

Switch	No.	Position	Operation
S1 (DIL-Schalter)	1	On	Initialisation
		Off	Normal operation
	2	On	Programming
		Off	Normal operation

LEDs

LED	Function	Comments
18V	18 V operating voltage present	
5,2V	5.2 V operating voltage present	
DSR	Serial interface signal DSR active	Remote station operational
DTR	Serial interface signal DTR active	HDA eco operational
RxD	Serial interface signal RX active	Send data
TxD	Serial interface signal TX active	Receive data

Notes

The relay contact for the pump motor is protected by fuse F1 (6.3 A slow-blow, 5x20).

When the battery must be exchanged, use exclusively type CR2032 (3 V lithium). The used battery has a minimum shelf life of five years.

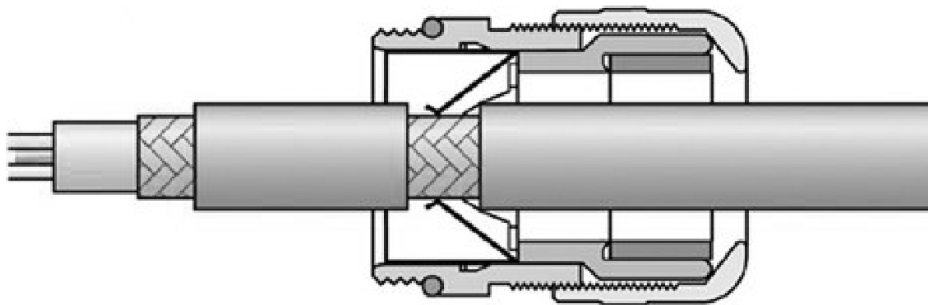
Pay attention to the polarity (pin 1) when retrofitting a socket modem for the RS232 or RS422 data interface.

The float switch is connected to X3, LS+ and LS-. It must be implemented as a normally closed switch (open = low medium)

The cable glands for the required cables are provided in the floor plate. (See also "Dimensional drawing" (section 2.5)).

Shielded cables must be used for the control cable of the flow meter and the data cable. Otherwise a negative effect of the function can occur and damages or malfunction can happen.

When using shielded cables take care that they are connected like showed in the picture. Take care during the installation that the shield of the cable has full contact with the contact finger of the EMR-cable gland. Only then the EMR-protection is carried out correct.



For the installation of the cables take care that the control cables are separately installed from the power cables. A minimum distance of 12in should be observed.

3.4.1 Installation of the float switch

(Optional)

It is possible to connect a float switch to the Wonder Box in order to prevent the tank from being pumped completely empty.

The float switch is not installed on delivery and must be mounted in the tank at the desired fill level by the installation company. The float switch must have normally closed contacts that open when the liquid level drops.

HORN TECALEMIT has a suitable float switch. Please contact the HORN TECALEMIT SERVICE for the right recommendation.

The 'float switch' function must be activated in the HDA eco automatic dispenser (see section 5.3.5.1) and the float switch must be connected in accordance with the circuit diagram.

3.4.2 Installation of the level probe

(Optional)

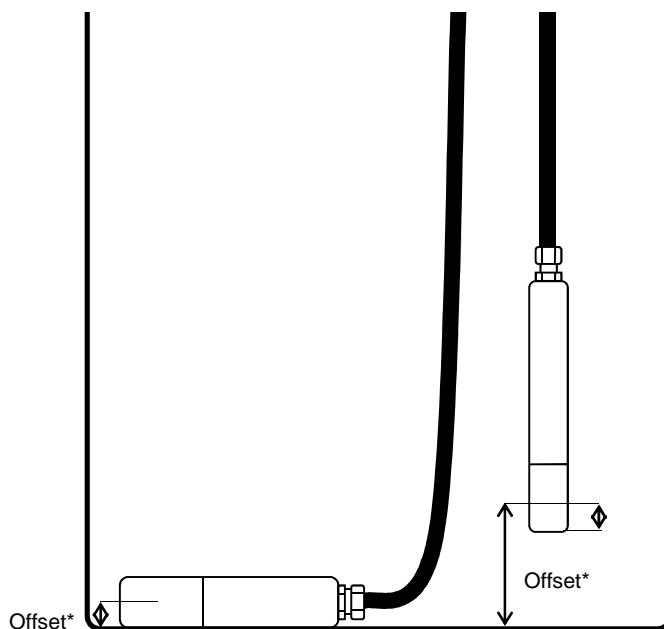
It is possible to connect a level probe (4-20 mA) to the HDA eco automatic dispenser. This makes it possible to monitor the level of fuel in the tank on the HDA eco automatic dispenser and to switch the pump off when the adjustable minimum level is reached. This protects the pump against damage caused by dry running and prevents any dirt on the floor of the tank from being sucked in.

The 'level probe' function must be activated in the HDA eco automatic dispenser and the probe must be connected in accordance with the circuit diagram (see section 3.4). This function should be activated on ordering the dispenser, but it can also be activated later. Subsequently, the automatic dispenser must be parameterised with the tank values (see section 5.3.5).

A suitable level probe must be selected with a measuring range adapted to the tank height (Please contact the HORN TECALEMIT service for suitable probes).

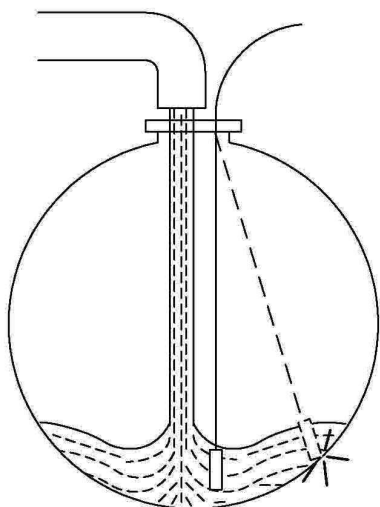
The level probe is not installed on delivery and must be mounted on the floor of the tank by the installation company. If the probe cable is extended, a terminal box with a pressure compensation element must be used (Please contact the HORN TECALEMIT service for the right selection.).

The sensor should be positioned horizontally at the lowest point of the tank so that the effective installation height (offset) is as close as possible above the bottom of the tank (see sketch). In particular cases it can be necessary to position the sensor suspended above the floor of the tank. Then the offset for this tank must be entered in the corresponding input mask. If there is a difference between the level read off and measured the offset can be corrected accordingly.



* The offset depends on the type of sensor

Ensure that the sensor is not swinging during and after installation. A protective pipe with bleeding hole on the upper end is to be foreseen in case the sensor is to be installed near a filling or suction line.



3.4.3 Retrofitting the level probe interface

It is possible to retrofit the optional level probe. Please contact TECALEMIT Customer Service.

3.4.4 Connection of the RS232 / RS422 interface

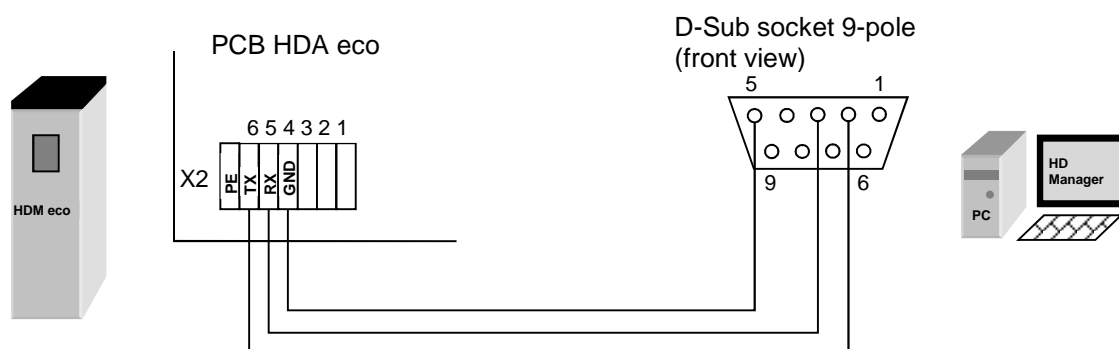
It is optionally possible to transmit data from the HDM eco to a PC. The HD Manager, HD Manager Basic or HD Manager eco PC software is required for this and the HDA eco must also be fitted with an additional module ('socket modem') for the respective interface.

The PC can be connected via an RS232 or RS422 interface, depending on the local conditions:

3.4.4.1 RS232-connection

In this case interference-free data transmission is possible only up to a cable length of approx. 600" (depending on the type and routing of the cable). A free RS232 interface (COM port) or a USB-to-RS232 adaptor is required on the PC and the RS232 socket modem must be plugged in on the HDM eco.

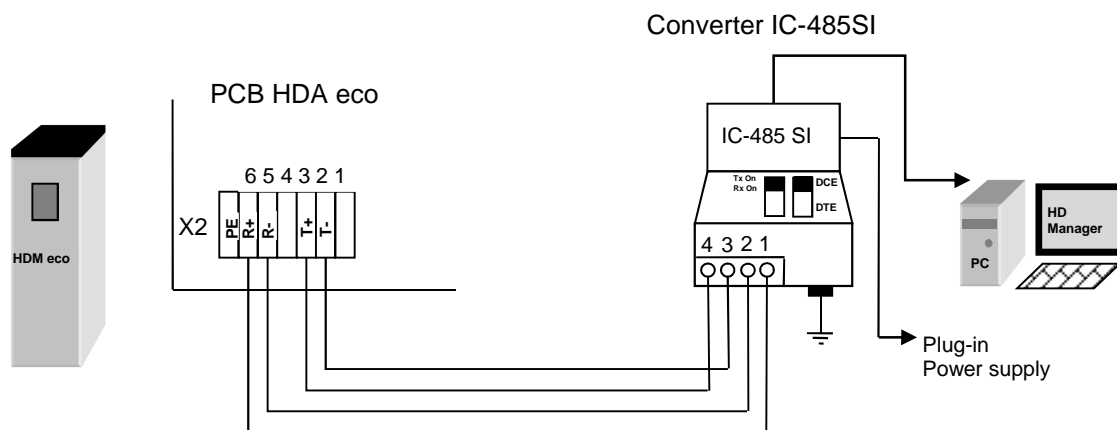
Connection diagram



3.4.4.2 RS422-connection

In this case data transmission is possible up to a cable length of approx. 1300 yards. An RS422-to-RS232 converter is required at the PC end and the 'RS422 socket modem' must be plugged in on the HDM eco. The PC must have a free COM port.

Connection diagram



3.4.4.3 Retrofitting the RS232/RS422 interface

It is possible to retrofit the optional RS232 or RS422 interfaces. Please contact TECALEMIT Customer Service.

3.5 Calibration of the measuring system

When the Wonder Box works together with a pump system where a flow meter is included, it is necessary to calibrate the system. The Wonder Box can only work fail-safe when the amount of pulses counted by the HDA eco fits to the volume of liquid the system deliver.

The following steps have to succeed for the calibration:

Step 1:

Enter the pulse value of the used flow meter as in sector 5.3.4.2.1 is described.

Step 2:

Find out the calibration factor of the measuring system.

Therefor a delivery must be made into a satisfactorily accurate vessel or undertaken by means of a reference meter.

The calibrating factor is calculated as follows:

$$\text{Calibration factor} = \frac{\text{Volume}_{\text{delivered}}}{\text{Volume}_{\text{shown}}}$$

Example:

A 20 litre measurement vessel is filled; the meter only indicates 19,9 litres. The new calibrating factor is calculated to:

$$\text{Calibration factor} = \frac{20,0}{19,9} = 1.005 \text{ (rounded)}$$

Step 3:

The correction of the pulse value is calculated as follows:

$$\text{Pulse value}_{\text{new}} = \text{Calibration factor} \times \text{current pulse value} \left[\frac{\text{pulse}}{\text{l}} \right]$$

Example:

$$\text{Pulse value}_{\text{new}} = 1.005 \times 53,95 = 54,22 \left[\frac{\text{pulse}}{\text{l}} \right]$$

Step 4:

As last step enter the pulse value_{new} as in sector 5.3.4.2.1 described.

When the last step is succeeded, the measuring system is calibrated.

4 First steps – Wonder Box

The Wonder Box is equipped with an autonomously working refuelling data acquisition system, which permits the recording and subsequent processing of all refuelling processes.

For this, following entries are possible for every refuelling:

- Driver
- Vehicle
- Mileage
- Order

In the factory setting of the Wonder Box, only the vehicle will be queried. **Vehicle no. 1** was already created with the code “**123**” so that a trial refuelling is possible.

Display (e.g.):

```
Vehicle:***  
10:29    24.03.12
```

Refuelling can proceed after entering the numbers ‘1’, ‘2’, ‘3’, confirming with ‘**ENTER**’ and drawing the nozzle.

Display (e.g.):

```
Please refuel !  
Volume: 0.00 L
```

5 Operating of the Fluid Inventory Control System HDA eco

The user is guided through the operation of the HDA eco by a menu structure (shown in chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**). The operating manual is orientated to this menu structure.

5.1 Switching on

After switching on the HDA eco, a function test runs (display test, program version display, memory test, real-time clock test). The automatic dispenser is in the ‘Dispensing’ mode after switching on.

5.1.1 Entry of values

The operation of the automatic dispenser takes place mainly via keyboard. The following basic entries are possible depending on the input fields (Exceptions are treated in the corresponding sections):

- a) Entry of numerical values (figures)
Entry is made via the number pad. Wrong entries can be deleted character by character with the “” key. Press ‘**ENTER**’ to confirm, ‘**EXIT**’ to cancel. Where is it meaningful, a minus sign can be entered with the ‘►’ key.
- b) Entry of alphanumeric values (letters & numbers)
Entry of numbers is made via the number pad. The entry of letters and special characters is made via the keys ‘▲’ and ‘▼’ confirm the character with the ‘►’ key. The characters are arranged as follows: ‘,’ ‘a’ - ‘z’, ‘A’ - ‘Z’, ‘0’ - ‘9’, ‘-’, ‘&’, ‘.’
Wrong entries can be deleted character by character with the ‘◀’ key.

- Press **'ENTER'** to confirm, **'EXIT'** to cancel.
- c) Selection of fixed settings
- In many input fields only a selection of few alternatives is possible. These are present and can be selected using the " and " keys and confirmed via **'ENTER'**. For cancelling use **'EXIT'**.

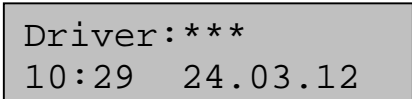
5.2 Refuelling mode

Refuelling can be carried out. Some of the necessary entries are optional. The querying of the inputs in the appropriate input screens as well as additional dispensing parameters can be specified in the menu item 'Dispensing options' (see section 5.3.4.1). Entering is cancelled when for more than 30 seconds no button is pushed. The following steps are necessary to dispense fuel:

5.2.1 Driver identification (optional)

The driver is identified by the associated ID (code or transponder + optional PIN). The IDs are specified in the menu item 'IDs' (see section 5.3.3)

Display (e.g.):



```
Driver:***  
10:29 24.03.12
```

A code with a maximum of 5 digits must be entered. A '*' character appears on the display for each digit entered. Entering leading zeros is not necessary.

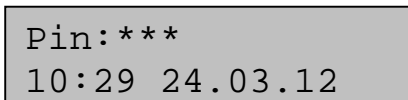
A transponder tag can be used as ID instead of the code. Mixed operation (operator code and transponder tag) is possible; each ID may be assigned either a code or a transponder tag.

The transponder tag needs to have a distance of 1 - 2" to the reader. Acceptance is indicated by a short beep tone.

It is possible to additionally issue a PIN with a maximum of 5 digits for each ID (code or transponder), (see section 5.3.3.1.1).

If an incorrect code or an incorrect PIN is entered, or if a transponder tag is used that has not been released, input is disabled for a period of time that is extended with each subsequent incorrect entry.

Display (e.g.):



```
Pin:***  
10:29 24.03.12
```

The current time is displayed in the lower line.

After dispensing, the dispensed amount from the last fuelling is displayed in the lower line for 15 minutes after dispensing ends.

Entry of the **master code** or the use of the master transponder switches to the **management operating mode**.

Master code factory setting: 99999. It is absolutely essential to change this code (see section 5.3.3.2)

5.2.1.1 Vehicle identification (optional)

The vehicle is identified by the associated ID (code or transponder + optional PIN) in the same way as the identification of the driver.

Display (e.g.):

```
Vehicle:***  
10:29 24.03.12
```

5.2.1.2 Tank content display (optional)

Using a level switch:

It is possible to switch to the tank content display from the input screens for the driver or vehicle identification by pressing the '▼' button. The contents information full / not full are displayed. (Only if the level switch is installed and set up.)

Display (e.g.):

```
Tank full/not full
```

The display only stays as long as the '▼' button is pressed!

Using a level probe:

It is possible to switch to the tank content display from the input screens for the driver or vehicle identification by pressing the '▼' button. The contents in percentage, the measured level and the contents in litres are displayed. (Only if the level probe is installed and set up.)

Display (e.g.):

```
Tank 20%  
510mm 68000L
```

The display only stays as long as the '▼' button is pressed!

5.2.1.3 Software version display

It is possible to switch to the software version display from the input screens for the driver or vehicle identification by pressing the '►' button.

Display (e.g.):

```
Version:4.020
```

The display only stays as long as the "►" button is pressed!

5.2.2 Dispensing without entering a code (optional)

If Code query: 'none' has been selected in the dispensing options in section 5.3.4.1.1 ID query, dispensing is possible without entering a code by pressing the 'ENTER' key. Nevertheless, if a vehicle code is available it can be entered; the dispensed fuel will then be assigned to it.

Display (e.g.):

```
Code:***  
10:29 24.03.12
```


The code query serves only to switch to the **management operating mode** with the master code (see section 5.3).

Notice: If “*ID query: none*” has been selected and the *Order* and *Mileage* queries have been deactivated too, dispensing begins **as soon as** the “**ENTER**” key is pressed or **the nozzle is drawn** when a nozzle switch is installed.

5.2.3 Entering the mileage (optional)

A 1 to 8-digit mileage can be entered directly. A mileage check can be carried out if necessary (see dispensing options).

Display (e.g.):

```
Mileage: 12000
10:29 24.03.12
```

For a downstream refuelling data evaluation the mileage must be assigned to a vehicle, i.e. the vehicle must be queried!

5.2.4 Entering the order number (optional)

An alphanumerical value with a max of 8 digits can be entered.

Display (e.g.):

```
Order: 54367
10:29 24.03.12
```

5.2.5 Refuelling

After all queried parameters have been entered, refuelling is requested.

Display (e.g.):

```
Please refuel!
Volume: 0.00 L
```

5.2.5.1 Entry of a preselected quantity (optional)

It is possible to enter a preselected quantity before drawing the nozzle. To this end the desired quantity in litres is entered directly using the numeric keys. After having pressed the first numerical key or ‘**ENTER**’, the display changes and indicates the pre-selected quantity.

Display (e.g.):

```
Preset: 120 L
Volume: 0.00 L
```

The preselection quantity is confirmed with ‘**ENTER**’; the entry of the preselection quantity is cancelled with ‘**EXIT**’. After pressing ‘**EXIT**’, a normal refuelling procedure is initiated without using the preselected quantity.

5.2.6 Refuelling procedure

After drawing the nozzle, the pump is switched on. The dispensed volume is displayed.

Display (e.g.):

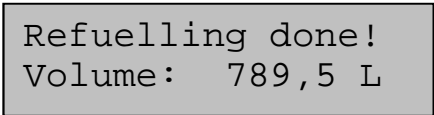
```
000.0 L
```

The dispensed quantity is updated continuously during dispensing.

Dispensing can be stopped using the **'EXIT'** button, even before the nozzle has been drawn. The time and quantity limits specified in the Menu Refuelling options (5.3.4.1) apply to the refuelling procedure.

Completion of dispensing by replacing the nozzle, pressing the **'EXIT'** button or reaching the preselected quantity / dispensing limit is shown by a corresponding message for approx. 5 seconds.

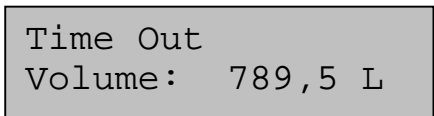
Display (e.g.):



Refuelling done!
Volume: 789,5 L

If dispensing is aborted due to a timeout, the cause of the abortion is shown in plain text on the display.

Display (e.g.):



Time Out
Volume: 789,5 L

The dispensed quantity is displayed for 15 minutes or until a new refuelling operation is initiated.

After completion of the refuelling procedure, the dispensing event is saved in the memory of the automatic dispenser with all entered data (driver, vehicle, etc.) plus a time stamp and can be processed running the corresponding management functions (see section 5.3).

5.2.7 Data retrieval

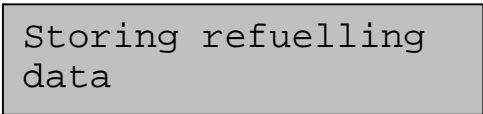
The data is retrieved either via the USB port on the automatic dispenser onto a commercially available USB flash drive or optionally by means of a data connection to a PC (corresponding accessory is required – RS232/RS422 interface). Data retrieval is possible only in the 'Refuelling' mode from the input screens for the identification of the driver or vehicle.

5.2.7.1 Data retrieval via USB flash drive

The dispensing and system data of the HDA eco are written to a commercially available USB flash drive. The data on the USB flash drive can be processed on a PC using the HD Manager refuelling data administration program. To retrieve the data, the USB flash drive is inserted into the opening provided on the left of the automatic dispenser housing. Before doing so, the cover (if any) must be swivelled away after loosening the knurled screw.

Optionally, in order to protect against access by unauthorised persons, an optional preset USB code must be entered after inserting the USB flash drive (see section 5.3.3.2). By default the USB code requisition is not activated.

Display (e.g.):



Storing refuelling
data

Attention:

To prevent the loss of data, the USB flash drive must not be removed during reading or writing.

After completion of the data retrieval, the retrieved refuelling data are marked as transmitted and are therefore ignored in the case of subsequent data retrievals. See section Annex B for further details, regarding the retrieved data and storage on the USB flash drive.

After completion of the data retrieval, the cover must be replaced and the knurled screw tightened.

5.2.7.2 Data retrieval via data cable

The connection of the appropriate accessory kit to a PC is necessary for data retrieval via a data cable. The data are retrieved and processed via the 'HD Manager refuelling data administration program' – refer also to the separate manual.

5.3 Management operating mode / main menu

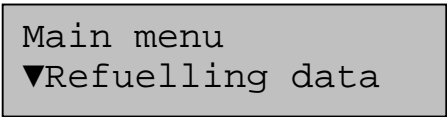
The operating mode is switched to management by entering a master *code or by the use of the master transponder (plus entry of the PIN, as required)*.

Attention:

Master code factory setting: 99999, no PIN. It is absolutely essential to change this code (see section 5.3.3.2)

In this mode of operation system parameters can be set and various management functions can be performed, such as administration of the dispensing data, totals, IDs etc.

Display (e.g.):



```
Main menu
▼Refuelling data
```

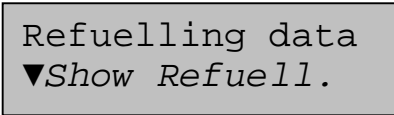
Menu items are selected with the '▲' and '▼' keys and selection is confirmed by pressing the 'ENTER' key. Sub-menus or menu items can be aborted by pressing the 'EXIT' key.

Pressing the 'EXIT' key in the main menu will return you to the dispensing mode.

5.3.1 Dispensing data menu

The functions for the display and processing of the dispensing data are combined in this menu. The HDA eco automatic dispenser can store up to approx. 10,000 dispensing data records. The oldest data records are overwritten once the memory is full.

Display (e.g.):



```
Refuelling data
▼Show Refuell.
```

After selecting the appropriate menu item, the respective sub-menus can be used to display or delete the dispensing data, to display the number of stored dispensing events or to create a report on a USB flash drive.

Select with 'ENTER', abort with 'EXIT'.

5.3.1.1 Display dispensing events

Display (e.g.):

```
Refuell.:    53 ♦  
24.03.12   14:44
```

All of the dispensing events stored in the memory can be viewed, beginning with the last dispensing event. The dispensing event to be displayed can be selected using the '▲' and '▼' buttons. The '◀' and '▶' buttons can be used to select the individual dispensing data (date, quantity, driver, vehicle, mileage, order no). For cancelling use 'EXIT'.

The status of the dispensing event is shown by means of letters / special characters after the time. Meanings:

'T' : Dispensing interrupted due to timeout
'X' : Dispensing data record was transmitted / saved to the USB flash drive

When pressing the 'ENTER' button an input mask appears. There the **displayed dispensing data set and all newer ones** can be marked as not transmitted. So these data can be retrieved from the PC or printed out again following e.g. loss of data or transmission errors.

Display (e.g.):

```
Refuelling data  
recover?
```

Confirm with 'ENTER', abort with 'EXIT'.

5.3.1.2 Reset dispensing events

Display (e.g.):

```
Menu Refuellings  
♦ Reset Refuell.
```

Confirm with 'ENTER', abort with 'EXIT'. The data from the stored dispensing events will be marked as already transmitted.

Notice:

The dispensing data are **NOT** physically deleted from the memory, but merely marked as already transmitted. That means that they will be ignored at a new transmission or USB report. It is possible to undo the deletion (see section 5.3.1.1).

5.3.1.3 No. of dispensing events

Display (e.g.):

```
Refuell.:    1532  
76.3% engaged
```

The number of dispensing events saved and the memory used (in percent) are displayed. The maximum possible number of dispensing data records that can be saved is approx. 10,000.

5.3.1.4 USB report – dispensing events

A report for the dispensing data not marked as already transmitted is saved as a text file ('DSPDATA.TXT') on a USB flash drive. The file can for example be opened with a text editor on a PC and printed out. The prerequisite for this is that a recordable USB flash drive is inserted in the USB port provided for it on the automatic dispenser.

Display (e.g.):

```
Saving report
1 / 122
```

File (e.g.):

```
HDM eco

USB Report - Refuelling data
.....

Date 24.03.12      Time 12:42

Dispensing data:  1
.....
Date 04-19-11      Time 09:24
Driver:            12
Vehicle:           15
Order:             17635
Mileage:           115050
Dispensing:        32.49 L

Dispensing data:  2
.....
Date 04-20-11      Time 02:38
Driver:            23
Vehicle:           12
Order:             14711
Mileage:           20134
Dispensing:        61.81 L

.....
```

The dispensing data are not marked as transmitted after the creation of the report. They will be saved again with a later report. If necessary, it is advisable to manually 'delete' the dispensing data (see section 5.3.1.2).

5.3.2 Totals menu

This menu comprises the functions for the display and processing of the dispensing totals, i.e. the accumulated dispensing quantities.

The totals (driver / vehicle) to be processed must be selected beforehand.

Display (e.g.):

```
Main menu
▼Total data
```

Subsequently, the items for the processing of the totals can be selected in the sub-menu.

Display (e.g.):

```
Menu Total data
▼Totals Driver
```

After selecting the appropriate menu item, the respective sub-menus can be used to display or delete the totals data or to create a report on a USB flash drive. Select with 'ENTER', abort with 'EXIT'.

5.3.2.1 Display totals

Display (e.g.):

Driver:	all	◆
Total1:	110556	L

Display (e.g.):

Driver:	1	◆
Total:	190	L

The total dispensed quantities '**Total1**' (not resettable) and '**Total2**' (resettable), the individual totals per vehicle and the total number of dispensing events without code entry can be displayed.

The total to be displayed can be selected using the '▲' and '▼' buttons. For cancelling use 'EXIT'.

5.3.2.2 Reset totals

Display (e.g.):

Menu Total data
◆Reset totals

Confirm with 'ENTER', abort with 'EXIT'. The total dispensed quantity '**Total 2**', the individual totals vehicle and the total number of dispensing events without code entry are reset. The total dispensed quantity '**Total1**' is not reset.

5.3.2.3 USB report - totals

A report of the counter readings is saved as text file on a USB flash drive ('DTOTDATA.TXT' for drivers, 'VTOTDATA.TXT' for vehicles). The file can be opened on a PC using a text editor and printed. Therefore a recordable USB flash drive has to be inserted to the USB port of the automatic dispenser.

Display (e.g.):

```
Saving report
100 / 100
```

File (e.g.):

```
HDM eco

USB Report - total data
.....

Date 24.03.12      Time 08:20

Vehicle totals

Total 1:           1430      L
Total 2:           611      L

Vehicle   1:       275      L
Vehicle   2:       569      L
Vehicle 100:       26      L
Vehicle ---:        5      L

.....
```

5.3.3 IDs menu

In this menu the IDs can be edited and ID reports can be created. The medium for the identification of the driver or vehicle before the start of refueling is called an ID. Various system parameters can be specified for each ID. The master ID is a special ID. It is required in order to access the management mode.

The ID (driver / vehicle / master) to be processed must be selected first.

Display (e.g.):

```
Menu Ident codes
▼Driver
```

The respective ID can subsequently be accessed via the sub-menu.

Display (e.g.):

```
◆ Driver      3
◆ Code:      18734
```

The ID to be edited can be selected using the '▲' and '▼' keys; '-' means that the respective ID has not been set up. In case a transponder has been set as access authorisation for an ID, the entry 'TRANS' appears instead of the code.

After selecting an ID switching between its different parameters takes place using the '◀' or '▶' buttons. Press the 'ENTER' button to change the parameter and 'EXIT' to complete the entry.

5.3.3.1 Code

A driver code with one to five digits can be entered. An existing code can be deleted by confirming deletion.

Instead of the five-digit code, a transponder tag can be assigned to an ID. The transponder tag needs to be held at a distance of 2 - 5 cm to the reader. A beep tone indicates that the transponder tag has been read.

5.3.3.1.1 PIN

A 1 to 5-digit PIN can be entered in addition to the code or the transponder tag. In case a PIN was assigned it has to be entered after the code. Only some (or none) of the IDs can be assigned with a PIN.

Display (e.g.):

◆ Vehicle	1
◆ Pin:	1234

5.3.3.1.2 Dispensing limit

Here a dispensing limit per fuelling can be entered for the vehicle, maximum 123 litres.

Display (e.g.):

◆ Vehicle	1
◆ Limit:	123 L

Attention:

If the general dispensing limit for the dispenser is lower, then this applies.

5.3.3.1.3 Maximum dispensing time

Here a dispensing time limit per refuelling can be entered for the vehicle, maximum 99 minutes. The default value is 30 minutes.

Display (e.g.):

◆ Vehicle	1
◆ Time:	30 min

Attention:

If the general dispensing time limit for the dispenser is lower, then this applies.

5.3.3.1.4 Mileage or operating hours query (only vehicles)

Depending on the vehicle type, prior to refuelling the mileage or operation hours of the vehicle can be entered to calculate the fuel consumption using an optional downstream fuel data processing system. Here it is specified whether the mileage (miles) or operating hours (hrs) are input.

Display (e.g.):

◆ Vehicle	1
◆ Request:	mileage

5.3.3.1.5 Mileage or operating hours status

Here the current mileage or operating hours of a vehicle can be viewed. If necessary the status can be edited.

Display (e.g.):

◆ Vehicle	1
◆ miles:	123456

Comment:

It is not necessary to enter the mileage when creating a vehicle. This should be done prior to the first refuelling. A selected mileage window becomes effective only from second refuelling.

5.3.3.1.6 Lock / release ID

An ID can be blocked or released here. Blocked IDs will not be accepted for refuelling. The Master ID cannot be blocked.

Display (e.g.):

◆ Vehicle	1
◆ locked:	No

5.3.3.2 Master ID

For secure access to the HDA management functions entering a master code with optional master pin is necessary.

The factory presets are: master code '99999'.

Display (e.g.):

Master
◆ Code: 99999

The '◀' and '▶' keys can be used to switch between the code and the PIN entry. Press 'ENTER' to change the respective parameter and 'EXIT' to complete the entry.

Instead of a code, a transponder can be assigned to the master code. After pressing the 'ENTER'-Key, the transponder tag must be held within a distance of 1 - 2" to the reader.

Notice:

In case the master code/PIN was forgotten (or a master transponder was lost) no more management functions are accessible. Please contact Tecalemit service for help.

5.3.3.3 USB report - IDs

A report for the driver IDs ('DIDDATA.TXT') and a report for the vehicle IDs ('VIDDATA.TXT') are saved as text files on a USB flash drive. The file can be opened on a PC using a text editor and printed. Therefore a recordable USB flash drive has to be inserted to the USB port of the automatic dispenser.

Display (e.g.):

```
Saving report
 3 / 100
```

File (e.g.):

```
HDM eco

USB report - IDs
.....
Date: 24.03.12      Time: 14:01
.....

Master
      Code:          99999
      Pin:            -
.....

Vehicle  1
      Code:          123
      Pin:            123
.....

Vehicle  2
      Code:          234
      Pin:            -
.....

Vehicle  3
      Code:          0104FAC78C
      Pin:            8696
.....
```

Comment: The ID file contains all codes and/or the associated PINs in plain text and should not be made accessible to unauthorised persons.

5.3.4 Menu System

Various system parameters for the operation of the dispenser can be viewed and adjusted in this menu.

Display (e.g.):

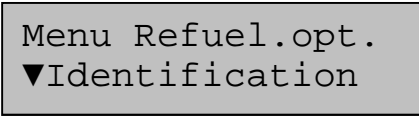
```
Menu System
▼Refuell. options
```

Menu items are selected with the '▲' and '▼' keys, confirmed with 'ENTER' and cancelled with 'EXIT'.

5.3.4.1 Menu Refuelling options

In this menu you can specify the items which are to be queried before a dispensing event. In addition, the inputs of a general dispensing limit, a maximum dispensing time and a timeout are also possible.

Display (e.g.):

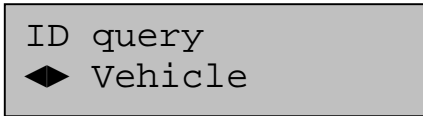


Menu Refuel.opt.
▼Identification

Menu items are selected with the '▲' and '▼' keys, confirmed with 'ENTER' and cancelled with 'EXIT'.

5.3.4.1.1 ID query

Display (e.g.):



ID query
◆ Vehicle

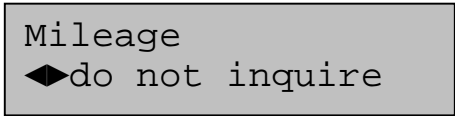
The query of the driver and vehicle ID is optional.
You can choose between 'No', 'Driver', 'Vehicle' and 'both'.

Notice:

If ID query: 'none' has been selected and the order and mileage queries have also been deactivated, dispensing will begin as soon as the ENTER button is pressed or the nozzle is drawn when a nozzle switch is installed!

5.3.4.1.2 Mileage y/n

Display (e.g.):

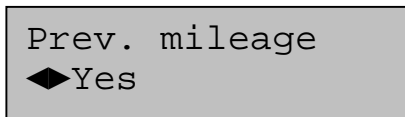


Mileage
◆ do not inquire

The input of the mileage before each dispensing operation is optional. You can choose between 'do not inquire', 'inquire' and 'always inquire'. If 'compulsory query' is selected, the input and checking of the mileage is compulsory. The mileage entered must be as high as or higher than that which was entered last time, the difference between the mileages needs to be smaller than the defined mileage window for the vehicle. In case a consumption calculation according to operating hours takes place for the vehicle in question, the same applies in turn for the entry of the operating hours.

5.3.4.1.3 Previous mileage y/n

Display (e.g.):




Prev. mileage
◆ Yes

In order to simplify the mileage entry, mileage from the last refuelling event (if available) can be displayed and edited. You can choose between 'yes' and 'no'. In case a consumption calculation according to operating hours takes place for the vehicle in question, the same applies in turn for the display of the operating hours.

5.3.4.1.4 Order y/n

Display (e.g.):

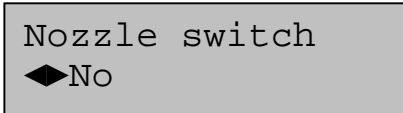


OrderNo
◆query

The entry of an order no. before each dispensing is optional. You can choose between 'query' and 'no query'.

5.3.4.1.5 Nozzle switch y/n

Display (e.g.):

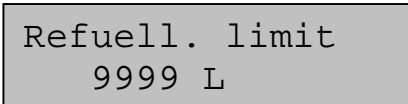


Nozzle switch
◆No

In order to keep the runtime for the pump working against a close nozzle as short as possible it is useful to install a nozzle switch. You can choose between 'yes' and 'no'. The default setting is 'no'.

5.3.4.1.6 Dispensing limit

Display (e.g.):

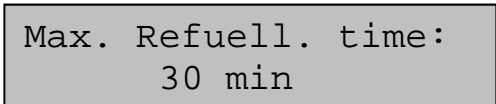


Refuell. limit
9999 L

The maximum possible dispensing quantity per refuelling operation can be specified here (absolute limit). A quantity between 5 and 9999 litres can be entered. In case the vehicle specific limit is lower than it applies.

5.3.4.1.7 Max. refuelling time

Display (e.g.):

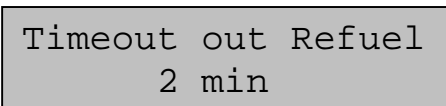


Max. Refuell. time:
30 min

The maximum possible dispensing time per refuelling operation can be specified here. A value between 1 and 99 minutes can be entered. In case the vehicle specific limit is lower than it applies.

5.3.4.1.8 Timeout Refuelling

Display (e.g.):



Timeout out Refuel
2 min

The maximum elapsing time during a dispensing event without any medium being dispensed can be specified here. (Example: The nozzle wasn't replaced after dispensing was completed). A time between 1 and 9 minutes can be entered.

5.3.4.2 Menu Dispensing point

Display (e.g.):



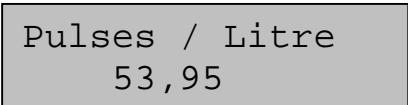
Menu Dsp. Point
▼Pulses / litre

After selection of the menu items, the corresponding dispensing point parameters can be adjusted in the respective sub-menus.

5.3.4.2.1 Pulses / Litres

The range of the pulse value: 1.00 up to 1000.00

Display (e.g.):



Pulses / Litre
53,95

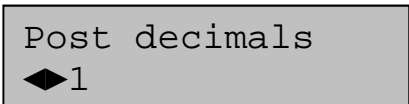
The pulse value of the mounted pulse generator can be set in this menu. The number of volume pulses per litres must be entered. A value between 1.00 and 1000.00 can be entered.

The default pulse value is 53,95, equivalent to the pulse value of the FMOG100 flow meter. (This means 53,95 pulses per litre.)

It can be necessary to change the value after the calibration of the measuring system. How the measuring system can be calibrated see section 3.5.

5.3.4.2.2 Post decimals

Display (e.g.):



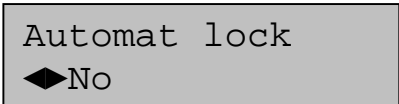
Post decimals
◆1

The number of decimal points displayed after dispensing can be displayed and changed here.

You can choose between '0', '1' and '2'.

5.3.4.2.3 Automat lock

Display (e.g.):



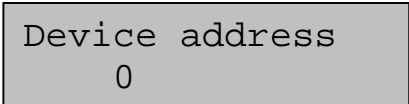
Automat lock
◆No

Here you can set if the automatic dispenser should be blocked for refuelling or enabled again after having been blocked.

You can choose between 'yes' and 'no'.

5.3.4.2.4 Device address

Display (e.g.):



Device address
0

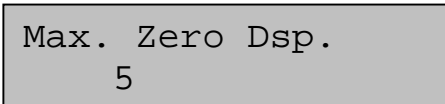
The device address is necessary for the joint operation of several HDM eco units with one HD Manager program (not possible with HD Manager eco).

A value of between 0 and 9 can be entered.

5.3.4.2.5 Max zero refuellings

Several sequential refuelling events that were completed with a dispensing quantity below 500 ml ('zero refuelling') indicate a system error, e.g. lack of fuel, defective pump or meter.

Display (e.g.):



Max. Zero Dsp.
5

When a value > 0 has been set for 'max.zero refuelling events' the automatic dispenser blocks automatically after the adjusted number of consecutive zero refuelling occurred. A blocked automatic dispenser can be enabled again via the corresponding menu in the device once the cause for zero refuellings has been eliminated (see section 5.3.4.2.3).

A value of 0 deactivates the blocking function. Values from 0 - 99 can be entered.

5.3.4.3 Extended menu :

Extended system settings or queries can be made here.

Display (e.g.):

```
Menu Extended
▼Real-time clock
```

Menu items are selected with the '▲' and '▼' keys, confirmed with 'ENTER' and cancelled with 'EXIT'.

5.3.4.3.1 Real-time clock menu:

Display (e.g.):

```
Real-time clock
▼Date / Time
```

The settings for the real-time clock (RTC) can be made here. Menu items are selected with the '▲' and '▼' keys, confirmed with 'ENTER' and cancelled with 'EXIT'.

5.3.4.3.1.1 Date / Time

Display (e.g.):

```
Date: 24.03.12
Time: 11:21:04
```

The date (mm-dd-jj) and time (hh:mm:ss) settings of the integrated real-time clock can be inspected and changed if necessary. You can change the position using the '◀' and '▶' buttons.

5.3.4.3.1.2 Clock correction

Display (e.g.):

```
Clock correct.
◆ + 5 sec. / day
```

In order to achieve the greatest possible accuracy of the integrated real-time clock a correction of up to ± 20 seconds per day can be done. The correction is carried out each time at midnight or when the device is switched on. During the device is switched off the clock still runs, but no correction is carried out. The correction ranges can be set from -20 to + 20 sec. / day using the '◀◀' and '▶▶' buttons.

5.3.4.3.1.3 Summer time/switching between summer and winter time

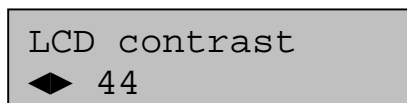
Display (e.g.):

```
Time: 11:52
◆ Preset 1h
```

Using the '◀' and '▶' buttons, the system time can be manually set 1 hour forward or backward, depending on the season. The system time is then changed by pressing the 'ENTER' key.

5.3.4.3.2 LCD contrast

Display (e.g.):



LCD contrast
◆ 44

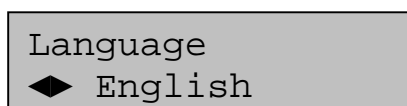
The contrast can be decreased or increased using the '◀' and '▶' buttons.

The setting range extends from 0 (low contrast) to 63 (high contrast). Changing the default value should only be necessary under extreme operating conditions (very low/very high temperatures).

In case the incorrect contrast has been saved inadvertently (display unreadable): Switch off the device and switch on again keeping the 'EXIT' button pressed (standard contrast will be selected). Subsequently adjust the contrast as described.

5.3.4.3.3 Language

Display (e.g.):

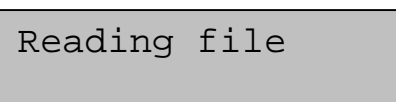


Language
◆ English

Various languages for the driver menus are to be selected using the '◀' and '▶' buttons. One of the languages ('language USB') can be loaded and selected as defined by the driver (see section 5.3.4.3.4).

5.3.4.3.4 Loading a language from a USB flash drive

Display (e.g.):

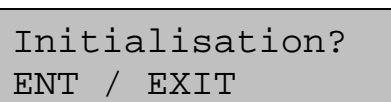


Reading file

It is possible to load an additional language for the user guidance from a USB flash drive. The prerequisite for this is that a USB flash drive containing a suitable language file 'LANGUAGE.CSV' is inserted in the USB port provided for it on the automatic dispenser. For further information see Annex B.

5.3.4.3.5 Initialisation / restoring the factory settings

Display (e.g.):



Initialisation?
ENT / EXIT

The device can be initialised here. Some of the factory settings are restored. Dispensing data records and non-resettable totals (Total 1) are not deleted. The following values are manipulated:

- The driver and vehicle totals as well as the resettable counter 'Total 2' are cleared
- The non-resettable counter Total 1 is not deleted
- The dispensing data records are marked as transmitted
- All ID codes are deleted and the parameters re-initialised
- The 'Master code' is set to "99999" without Master Pin

- The 'Dispensing limit' is set to 99999 L
- The 'Maximum ref. time' is set to 30 minutes.
- The 'Ref. Timeout' is set to 2 minutes
- The 'Contrast' of the LCD is set to 44
- The 'Communication code' is deleted.
- The 'Lock automat' is released

5.3.4.3.6 Configuration info

This display is intended for service purposes. It provides information about the configuration of the automatic dispenser.

Display (e.g.):

```
Config. info
00110010
```

5.3.4.3.7 Release

This display is intended for service purposes. It can be used to change the configuration of the automatic dispenser

Display (e.g.):

```
Release
Code:
```

NOTE! Incorrect entries made by unauthorised persons can result in incorrect functioning of the automatic dispenser!

5.3.4.3.8 Communications PIN

Display (e.g.):

```
Comm-PIN
12345
```

Here an optional communication PIN for the transmission of data to the HD Manager PC program can be viewed (but not changed). The communication PIN can only be set or deleted using the HD Manager program.

5.3.4.3.9 USB code

Display (e.g.):

```
USB code
◆No
```

Here it can be specified if the retrieval of the refuelling data via USB flash drive in dispensing mode is to be protected against unauthorised access by the input of master code or by the use of the master transponder.

You can choose between 'yes' and 'no'.

5.3.4.4 Transponder ID

Display (e.g.):

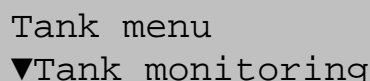
```
ID 002
01 04 FA C7 8C
```

Transponder tags and the associated ID, if any exist, can be identified. The transponder tag needs to be held at a distance of 2 - 5 cm to the reader. To cancel use 'EXIT'.

5.3.5 Fuel tank menu

The function of the tank monitoring as well as tank parameters (level probe option only) can be set in this menu.

Display (e.g.):

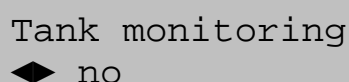


Tank menu
▼Tank monitoring

5.3.5.1 Tank monitoring

Monitoring of the tank contents including blocking of the dispensing point in case of empty tank can be switched on or off. This applies both to monitoring by means of a low medium contact (e.g. float switch) and to the monitoring and display of the tank contents by means of a level probe (optional).

Display (e.g.):



Tank monitoring
◆ no

You can choose between 'yes' and 'no'. When the setting is 'no', the '▼' key has no function. The tank volume is not displayed.

Note:

In the case of use of the low medium contact, the automatic dispenser is disabled when the contact switches from the closed to the open state. The level at which disablement takes place when a level probe (optional) is used depends on the setting of the disable volume (see section 5.3.5.2.8).

5.3.5.2 Tank parameter menu (level probe option only)

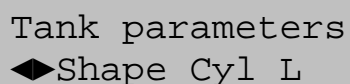
In the case of use of a level probe, it is necessary to parameterise the probe and the associated tank as accurately as possible in order to obtain exact level values. You can switch between the different tank parameters using the '◀' or '▶' buttons. Press the 'ENTER' button to change the parameter and 'EXIT' to complete the entry.

Instructions for the installation of the level probe in the tank can be found in section 3.4.2

5.3.5.2.1 Form / tank shape

The shape of the employed tank can be set here. If there is no tank, then accordingly no tank is set (shape '---').

Display (e.g.):



Tank parameters
◆Shape Cyl L

Change the tank shape using the buttons '◀' and '▶'. There is a choice of the tank shapes cube, cylinder vertical ('Cyl V'), cylinder horizontal ('Cyl L'), 'ball' or no tank ('---').

5.3.5.2.2 Max. volume / maximum tank volume

The maximum tank volume can be entered here. It corresponds to a completely filled tank.

Display (e.g.):

```
Tank parameters
◆MaxVol 10000 L
```

A value of between 0 and 99999 litres can be entered.

5.3.5.2.3 Level / maximum level

Display (e.g.):

```
Tank parameters
◆Height 1600 mm
```

The maximum level in mm is entered as value between 0 and 9999.

5.3.5.2.4 Density of medium

Display (e.g.):

```
Tank parameters
◆Dens. 860 g/L
```

In order for the hydrostatic tank probe to work precisely, the density of the tank medium [g/l] must be entered. A value of between 0 and 9.999 can be entered.

5.3.5.2.5 Sensor type

Display (e.g.):

```
Tank parameters
◆Sensor 200 mbar
```

Input of the sensor type (sensor range). There is a choice of the types 200, 300, 500 and 1000 mbar. The selection of the type of sensor is made according to the height of the tank. Hence, 200 mbar correspond to 200 cm water gauge or 230 cm diesel gauge, 300 mbar to 300 cm water gauge or 340 cm diesel gauge and so on.

5.3.5.2.6 Sensor offset (installation height)

Display (e.g.):

```
Tank parameters
◆Offset 11 mm
```

Offset entry [mm] (corresponds to the effective installation height of the sensor relative to the floor of the tank). Using the '►' button at the first position, with '-' it is possible to enter a negative offset (e.g. when the sensor is installed below the tank floor or inclined tank). A value of -999 to 9999 mm can be entered.

5.3.5.2.7 Zero point compensation of the sensor



Attention:

The sensor must be outside the liquid for the zero point compensation.

Display (e.g.):

```
Tank parameters
◆Zero adjust?
```

The presently measured probe current is displayed after pressing the '**ENTER**' button. The value should be within the range 4 mA +/- 0.2 mA.

Display (e.g.):

```
Zero compensation
Current: 4.05 mA
```

Pressing the '**ENTER**' button twice executes the zero point compensation for the probe, while the '**EXIT**' button aborts the compensation.

5.3.5.2.8 Min. volume / disable volume

A limit value can be entered here, below further refuelling with the HDA eco will be disabled.

The value is checked before each refuelling, i.e. active refuelling will be ended in every case! The disablement is automatically cancelled after refilling the tank or switching the tank monitoring off.

Display (e.g.):

```
Tank parameters
◆MinVol 5000 L
```

A value of 0 to MaxVol (see 5.3.5.2.2) can be entered.

5.3.5.3 Tank contents (level probe option only)

The filling quantity in percent, the measured filling level and the filling quantity in litres are displayed.

Display (e.g.):

```
Tank      20%
510mm     6800L
```

6 Commissioning

6.1.1 First and subsequent priming

For commissioning, all that is required after integration of the Wonder Box into a pump system is to carry out a 'normal refuelling' as described in section 5.2, in which medium is sucked out of the tank. In order to avoid damage to the pump and seals, attention must be paid that the pump does not run dry for an unnecessarily long period of time.

Note:

A normal priming procedure should not take longer than 2 minutes. If the medium has not been primed within this time, the suction line must be inspected for leaks and the function of the return line must be checked.

Unnecessarily long dry running (> 1 min) has to be avoided since otherwise important components may be destroyed.

7 Operation

The following must be observed for normal operation:

- ! **Avoid dry running of the pump system (> 1 min).**
- ! **A defective hose can cause contamination.**
- ! **Following the filling procedure, the nozzle must be hung up in the nozzle holder and the hose protected against being driven over by hanging it on the hose holder.**
- ! **Only vehicle tanks and suitable containers may be filled. The dispensing procedure must be permanently supervised.**

To draw off the medium in normal operation, proceed as follows:

1. Log in at the pump system to activate and switch it on.

Details for the activation of the pump system are described in section 5.2

3. Put the nozzle into the container or the vehicle tank.
4. Open the nozzle until the desired quantity has been dispensed.
5. Replace the nozzle to the nozzle holder. The pump system is switched off by pressing the EXIT button.

8 Emergency operation

HDA eco units are factory-equipped with an emergency operating mode. This enables emergency operation of the pump even when the HDA eco is defective.

For this, please proceed as follows:

- Open the housing door
- Switch on emergency operating mode on the underside of the HDA eco. The feed pump starts immediately.
- Carry out the refuelling procedure.
- The feed pump must be switched off again immediately after completion of the refuelling procedure by switching off the emergency operation switch.

The access door in the housing should be closed again after refuelling to protect against unauthorised use.

9 Maintenance

Although the Wonder Box is almost maintenance-free, the following work should be performed regularly in order to ensure trouble-free operation:

9.1 Cleaning of the device

Clean dirty outsides carefully with a damp cloth and gentle household cleaner after having disconnected the device from the power supply. Do not use harsh cleaning agents or solvents.

9.2 Exchange of the buffer battery

The HDA eco automatic dispenser has a buffer battery for the backup of the time and the date in the event of a power failure. The battery must be exchanged every 5 years by an electrician.

When an exchange of the battery is necessary, use exclusively type CR2032 (3 V lithium). The battery should have a minimum shelf life of five years.

After exchanging the battery, check the system time and correct if necessary. (see section 5.3.4.3.1.1)

9.3 Type Plate and Warning Signs

! The warning signs attached to the device and the type plate must be well readable. Dirty signs must be cleaned, and replaced if necessary.

10 Spare parts

The following spare parts are available:

	Article-No.
HDA eco	816 800 004
Typeplate	420 004 204
Housing	516 800 001

11 Disposal

The device is to be emptied completely and the liquids properly disposed of in case it is taken out of service.

The equipment is to be disposed of properly when taken permanently out of service:



- Return old metal for recycling.
- Return plastic parts for recycling.
- Return electronic waste for recycling.

👉 The water legal regulations are to be followed.

11.1 Return of batteries

Batteries must not be disposed of with the domestic waste. Batteries can be returned free of charge via a suitable collecting point or to the dispatch stores. Consumers are legally obliged to return used batteries.

Batteries that contain harmful substances are marked with a crossed out dustbin (see above) and the chemical symbol (Cd, Hg or Pb) of the heavy metal that is decisive for the classification as containing harmful substances:

1. "Cd" stands for cadmium.
2. "Pb" stands for lead.
3. "Hg" stands for mercury.



Konformitätserklärung *Declaration of Conformity*

Hiermit erklären wir, dass die Bauart
We herewith declare that the construction type

Typ:	HDA eco Wandgerät
Type:	HDA eco wall unit
Bezeichnung:	Tankautomat
Designation:	Dispensing automat
Artikel-Nr.:	110500700
Item No.:	

in der von uns gelieferten Ausführung folgenden einschlägigen Bestimmungen
entspricht:
in the form as delivered by us complies with the following applicable regulations:

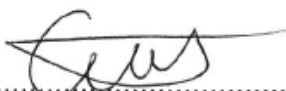
- | | |
|---|--|
| - EMV-Richtlinie 2004/108/EG
<i>Electromagnetic compatibility</i>
2004/108/EC | - Niederspannungsrichtlinie
2006/95/EG
<i>Low voltage equipment</i> 2006/95/EC |
|---|--|

Angewendete harmonisierte Normen:
Applied harmonised standards:

EN ISO 12100-1, -2 EN 60204-1

EG-Dokumentationsbevollmächtigter:	Jörg Mohr	Horn GmbH & Co. KG
<i>EC official agent for documentation:</i>		Munketoft 42
		24937 Flensburg

16.05.2012
Datum
Date


.....
i.V. Dipl.-Ing. Jörg Mohr
Entwicklungsleiter / *Engineering Manager*

HORN GmbH & Co. KG
Munketoft 42
D-24937 Flensburg
Germany

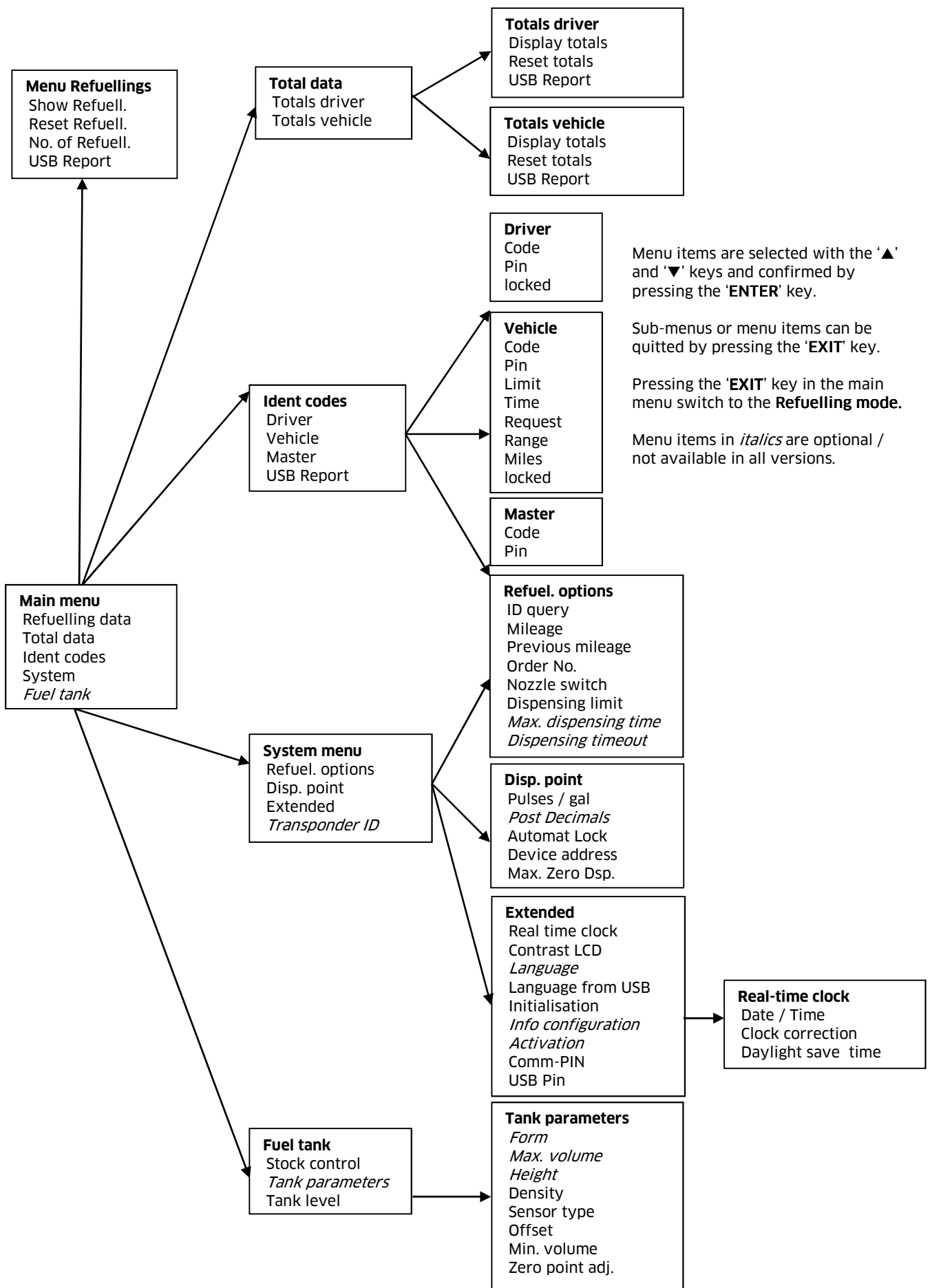
T +49 461 8696-0
F +49 461 8696-66
info@tecalemat.de
www.tecalemat.de

Geschäftsführer:
Torsten H. Kutschinski

Commerzbank AG
BLZ 215 400 60
Konto-Nr. 2476000

SWIFT COBADEFFXXX
IBAN DE33215400600247600000
Amtsgericht Flensburg HRA 4264
USt-IdNr. DE813038919

Annex A. Menu structure: Management operation



Refuelling and ID data are written as a file to the USB flash drive or read from it (ID data only). The data is processed with the HD Manager eco program. It is preferable to use the USB flash drive included in the scope of supply or available as a special accessory; the suitability of third party makes cannot be guaranteed.

A maximum of approx. 240 files can be created on the USB flash drive. A corresponding error message is displayed if this number is exceeded. In this case older files are to be deleted.

Export of refuelling data

In the first export, all existing and not yet exported refuelling data are saved in the file 'DATA0001.TXT'. For all subsequent transmissions, all newer refuelling data are saved in the files 'DATA0002.TXT', 'DATA0003.TXT' and so on; i.e. a new file with an incrementing index is generated for each export procedure. If older files are deleted, moved or renamed, the procedure starts with 'DATA0001.TXT' again.

Export of ID data

ID data for drivers or vehicles are automatically saved in the file 'DATAOUT.TXT'. If the data are to be exported again at a later time (e.g. because new vehicles have been created), then this file must be deleted, moved or renamed. It will then be created again at the next data transfer.

Import or restoring of ID data

A previously saved ID data file 'DATAOUT.TXT' can be read into the HDM eco again by being renamed or copied to 'DATAIN.TXT'. This file can be also be created by the HD Manager eco program. After the transfer the restored file is renamed '_DATAIN.TXT', so that it is not read in again next time. Any already existing file with the name '_DATAIN.TXT' will be overwritten.

Refuelling data format

Each file comprises up to 2,000 consecutively numbered fuelling data records. Each refuelling data record is written in a line closed by CR, LF. The data fields are separated by a comma.

Data fields:

- Dispenser no.(numerical, two-digit),
- Dispensing point no.(numerical, two- digit),
- Dispensing No. (numerical, five-digit)
- Driver (numerical, four-digit),
- Vehicle (numerical, four-digit),
- Order (alphanumeric, eight-digit),
- Mileage (numerical, eight-digit),
- Quantity [L] (numerical, four integer digits, decimal point, post decimal positions.),
- Product-no. (numerical, two-digit),
- Date (DD.MM.YY),
- Time (HH.MM).
- Checksum (sum of all characters modulo 256 in ASCII representation)

Example:

```
01,01,00001,0001,0001,Test 1,00000100,0001.000,01,04.06.02,15:35,3B
01,01,00002,0002,0002,Test 2,00000200,0002.000,01,04.06.02,15:35,41
01,01,00003,0003,0003,Test 3,00000300,0003.000,01,04.06.02,15:35,47
01,01,00004,0004,0004,Test 4,00000400,0004.000,01,04.06.02,15:35,4D
01,01,00005,0005,0005,Test 5,00000500,0005.000,01,04.06.02,15:35,53
```

ID data format

Each file comprises up to 4000 ID data records, with a maximum of 2000 for drivers and 2000 for vehicles.

Each data record is written to CR, LF closed line when doing so. The data fields are separated by a comma.

Data fields:

- ID type (numerical, one-digit: ,1': Driver ID, ,2': Vehicle ID),
- ID number (numerical, four-digit),
- ID code (alpha numerical, max. ten-digit),
- ID pin (numerical, max. five-digit)
- ID blocked (numerical one-digit'0': no, '1': yes, ,)
- Entry mileage (miles) / operating hrs. (numerical, one-digit, '0': mileage (miles), '1': operating hours.)*
- Mileage window: (numerical, four-digit)*
- Max. dispensing time in minutes (numerical two-digit)*
- Dispensing limit in litres (numerical, four-digit)*
- Checksum (sum of all characters modulo 256 in ASCII representation)

*Values are only applicable to vehicles and ignored for drivers

Example:

```
2, 0001, 123, , 0, 0, 1000, 15, 0999,F7
2, 0123, 011A342F02, 55555, 0, 0, 1500, 15, 1100,EF
2, 0003, 3, , 0, 0, 0000, 00, 9999,D8
2, 0004, 4, , 0, 0, 0000, 00, 9999,DA
2, 0005, 0F0068FD24, , 1, 0, 0000, 00, 9999,BC
```

Generation of a language file

A new language file has to be examined and approved by HORN TECALEMIT. Please contact customer service at HORN TECALEMIT.

A faulty language file can impair the operation of the automatic dispenser.

The name of the language file is specified as 'LANGUAGE.CSV'.

Language file format

Each file consists of a number of lines. Each line contains two data fields separated from each other by comma or semicolon and corresponds to a unique text entry. Spaces between the data fields are not permitted and may possibly be considered to be part of the text. Each line must be closed by CR, LF.

Data fields:

Unique text ID (numeric, maximum three-digit) each text in the driver guidance is assigned exactly one ID

Text (1 - 16 characters) translation of the original text. Characters will be cut off if the maximum text length is exceeded.

Example:

0, Yes

1, No

2, Tank level

...

HORN GmbH & Co. KG

Munketoft 42
24937 Flensburg
Germany

T +49 461-8696-0
F +49 461-8696-66

www.tecalemit.de
info@tecalemit.de