Cabman MDT installation manual

Documentnumber:	EUP-MDT-2-7.4
Documentversion:	R22
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Date:	08-01-2026

Contents

Version	Description	Date	Author
R01	Initial version	5-4-2019	Vincent Bekker
R02	Finalized version	12-4-2019	Vincent Bekker
R03	Added chp8 + 4.2	6-5-2019	Vincent Bekker
R04	Changed chp 8	15-5-2019	Wouter Kok
R05	k-factor change	15-5-2019	Wouter Kok
R06	Version updated	29-6-2020	Wouter Kok
R07	Software version number updated	29-08-2020	Martijn Mathijssen
R08	Software version number updated	07-10-2020	Christian Huijsmans
R09	Changed doc namet. chp 1 changed	16-10-2020	Wouter Kok
R10	Enhancements for international market	19-11-2021	Vincent Bekker
R11	Added 4.2.7 Securing the cables	08-11-2022	Erwin Roeters
R12	Added names of the connectors Blurred the approval number Added connection diagram	15-11-2022	Martijn Mathijssen
R13	Update info table and update figure 4.5 and added external speaker	21-07-2023	Thomas Loch
R14	Updated the software update error codes, mfs codes, connection diagrams	28-08-2023	Martijn Mathijssen
R15	Updated the alarmbutton in the connection diagrams	20-10-2023	Martijn Mathijssen
R16	Updated the version number to 1.2RC5 Added 5inch display	28-11-2023	Martijn Mathijssen
R17	Corrected maximum input voltage and amps	19-01-2024	Nick van Endhoven
R18	Add Eco Calibration	05-03-2024	Remco Heeren
R19	Updated sealing	17-04-2024	Wouter Kok
R20	Update software version	04-03-2025	Thomas Loch
R21	Added troubleshooting steps for taximeter message F020	04-12-2025	Martijn Mathijssen
R22	Added alarm Button and new diagram	08-01-2026	Remco Heeren

Part I
General

Cabman MDT installation manual

1. Introduction

This manual applies to the following version of the Cabman MDT and accessories:

Physical Scope	Cabman Mobile Data Terminal	
Hardware	MDT Box	P8007-001
	MDT Display 7 inch	P8008-001
Software	MDT Software	1.3-23CF5E52
	MDT Software CRC	F6C10D17
	MDT Platform version (Kernel + Drivers)	1.3.0
	MDT Platform CRC	d7cc39a0
Manual	Cabman MDT installation manual	EUP-MDT-2.7.4
	Cabman MDT manual	EUP-MDT-2.8.1

This document describes the steps that must be taken to successfully install a Cabman MDT. This document is divided into three parts:

- General - Useful information for every user.
- Workshop - Installation guide to install a Cabman MDT,
- Company owner - The company owner can set the company lock and export data

2. Product overview

2.1 Product features

The Cabman MDT is a product of Euphoria Software BV. It is a data terminal with a touchscreen that is mounted in a taxi. The screen can be operated entirely with your fingers and contains two additional user interfaces, namely a USB port (right side of the screen) and a card reader (also on the right side of the screen).

Figure 2.1 Cabman MDT

2.2 Product version

The product version of the Cabman MDT is recorded in the Product Number (PN:) and is displayed in two ways, both physically and in the software (Figure 2.2). In addition to the Product number, the product name, manufacturer name, type approval number, and serial number can also be found here.

In the option screen (button 8 in Figure 2.3) you have the option to request this information via the Info button. In addition, the software version history can also be requested via this route.
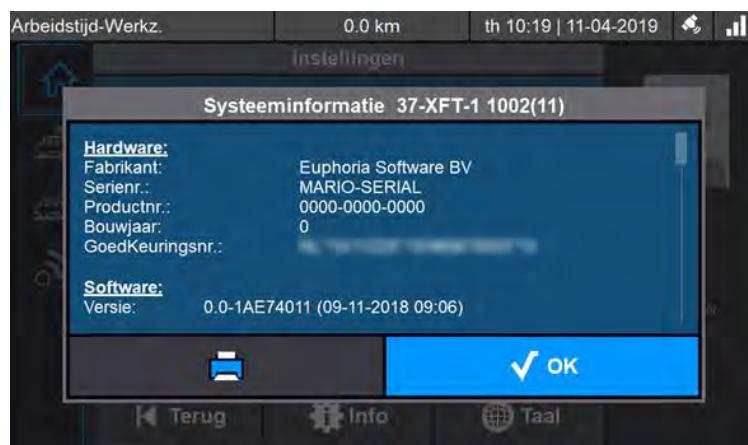
Figure 2.2 Version information screen

2.5 Usage Smartcards

MDT smartcards kaarten are personal, do not hand out your on-board computer card to third parties. You must also keep the associated PIN code secret. Most common card is the workshopcard, only for the recognized MDT workshops.

MDT Smartcard workshop

These cards are only used to securely identify the relevant cardholder. This ensures that only authorized persons can read and adjust data in the MDT.

Safety logout

The holder of the card can log out at any time by removing their card when the car is stationary.

Important! After logging out, the user should always see a message that he or she has been logged out successfully. When removing the card, the user should also always check whether the work level in the top left of the screen is set to 'Basic'. If this does not happen, the BCT must be submitted for repair.

Figure 2.3 Home scherm details

2.6 Scherm overview

The main screen consists of the following elements, see figure 2.3:

1. Work mode and work level indication, this can be used to recognize which type of user is logged in and how time and kilometers are registered.
2. Mileage registered by the Cabman BCT since activation
3. Local time and date of the Cabman MDT
4. Indication symbol for GPS reception
5. Indication symbol for datacommunication reception
6. Login button to log in with driverid
7. Trip overview. Depending on the access rights, a complete overview or only the current service can be seen here
8. Options button
9. Status button
10. Main screen. User or status dependent information is shown here.

2.7 Diagnosis and self-test

The Cabman MDT is equipped with a self-test that you can use to check whether the Cabman MDT is functioning properly. In the Home tab you can press the Status button (see figure 2.3, button 9). This immediately starts the self-test and shows an overview of the results (Figure 2.4).

Figure 2.4: Status overview

Any active errors are first shown with their error code and description. The following sections are shown below:

Selftest shows a summary of the self-test status, OK or Errors detected. This shows immediately whether the self-test was successful.

Status shows the current status of the tested parts. These are:

- CRC test
- System data integrity
- GPS sensor
- ODO sensor
- Accelerator sensor
- Switched power supply
- Linked taximeter (if present)
- Printer (if equipped)
- Data communication (if present)

Manual self-test may be started. The manual self-test consists of:

1. A check of the touchscreen, press the indicated rings until the Cabman MDT gives a sound signal
2. A check of the entire color spectrum (red, green and blue) to validate that the LCD is functioning correctly. You can then complete the manual test.

2.8 In case of malfunctions

A distinction is made in the Cabman MDT between malfunctions and error messages. If the Cabman MDT indicates a malfunction, it can no longer be used for driving. The fault can be clearly recognized by the red main screen, see figure 2.5. In this case, the Cabman MDT must be presented for repair to an official Cabman MDT workshop. The following paragraphs provide an overview of all malfunctions, errors and messages and describe how a possible cause of a malfunction can be determined and the corresponding possible solution.

Figure 2.5: Malfunction screen

2.8.1 Malfunction analysis
The following is important for analyzing malfunctions:

- The additional information of notifications
- Errors and/or messages related to malfunctions

2.8.2 F020 on the taximeter display
If the taximeter detects a vehicle speed exceeding 250 km/h, it will intermittently display the F020 fault message, alternating every second between F020 and the fare.
This condition is typically caused by an incorrect pulse input (e.g., illegal pulse generator, sensor issues, or an incorrect pulse constant).

Corrective Actions:

- Verify the pulse input from the speed sensor.
- Check or recalculate the pulse constant to ensure it matches the vehicle specification.

When an F020 fault occurs, the system automatically records an E008 entry in the event log.

2.8.3 Access to additional information from notifications
To view the additional information of the Current Alerts follow the steps below:

- Main screen Press [Current messages]
- Current messages Press [History]
- Navigate to the notification you want to view

2.8.4 Summary of malfunctions

Below you will find an overview of the malfunctions that can occur in the Cabman MDT

Code	Details
E001	Workshop generic message
E002	USB Updater error
E003	Loader error
E004	Authenticator error
E006	Cannot open Database. Contact servicedesk.
E007	Taxameter failure
E008	Overspeed detected on the taximeter (F020), check pulses
E009	SOTA Updater error
E011	Taximeter version incorrect
E013	Platform update error
E014	Check the display.
E015	The connected display is unknown.
E016	The connected display is not using encryption.
E017	Platform kernel update error
E018	Database is geëxporteerd
I003	Installed new firmware
I006	Sensor reboot.
I007	Reboot executed
I009	Modem logging
I010	Update package already installed
I012	Database upgrade
I013	Smartcard diagnostische info
I014	Cota diagnostische info
I015	Restart diagnostische info
I016	There is an error in the register function.
I017	There is an error in the register function.
I018	There is an error in the accelerator.
I019	There is an error in the accelerator.
I023	There is an error in the GPS sensor.
I024	There is an error in the GPS sensor.
I025	Trusted path imported
I026	Payment difference
I027	Eco event
I028	System restart for a "Software Over The Air" update
I029	Calibration required
I030	License
I031	Manual updating the MDT
I032	Date/time manually adjusted

I033	Taximeter recovery
I034	Smartcard TrustedPath
I036	Modem logging
I037	Database import failed

2.9 Important!

- Do not use a pen or other sharp objects on the Cabman MDT
- Do not operate the Cabman MDT while driving and keep your attention on the road.
- Check whether the housing and screen of the Cabman MDT are undamaged and whether the seal is broken.

2.10 Werkmodus/werkniveau

At the top left of the screen you can see the working level of the Cabman MDT at all times. This work level indicates how kilometers and hours traveled are registered by the Cabman MDT.

Operation mode	Operating levels	Work-, Drive- Resttime	Role
Deactivated	Deactivated	-	Unknown
Operational	Basis	-	Unknown
Operational	Working time	Break	Driver
Operational	Working time	Driving time	Driver
Operational	Working time	Other	Driver
Operational	Taxi	Driving time	Driver
Operational	Taxi	Other	Driver
Activating	Basis	-	Workshop
Workshop	Basis	-	Workshop
Company	Basis	-	Company/ Workshop

Part II
Workshop

3. Introduction

The Cabman MDT is supplied as a basic device and can be expanded with additional peripherals such as a printer (with card reader). In addition, the Cabman MDT can be expanded with various software options, such as an integrated Taximeter module and datacom module.

The following chapters explain how to install these configurations. Read the general part I in advance for a product overview.

4. Installation MDT-Box

This chapter describes the steps that must be taken to achieve a successful installation of the Cabman MDT, Basic Configuration. Use this chapter as a reference during the installation process.

4.1 Preparation

Before starting the installation, always check that all parts of your Cabman MDT are included and correct. The Cabman MDT must contain the following parts:

- The Cabman MDT Screen with production number PN8008-00X
- The Cabman MDT Box with production number PN8007-00X
- The Cabman MDT Software is: V1.2-221B5D53 (Figure 2.2)
- A power cable (X101)
- The connector cable (X106)
- The display cable (double USB-C connector)
- The MDT cover
- A GPS Antenna

4.1.1 Check Cabman MDT

Stamps must be present on the box. These seals are important for the validity of the Cabman MDT. Figure 4.1 shows where these seals should be placed. Decal/seal 1 and 2 should not be damaged before or after installation.

Furthermore, the Cabman MDT must be deactivated before it is installed. During the initial installation of the Cabman MDT in the vehicle, check that the work mode indicator (fig 2.3 :1) shows the status "Disabled".

Figure 4.1 – Stickers 1

4.2 Installation

If, in accordance with section 4.1, all parts are present and correct, you can start the actual installation. Follow the steps in this section in the steps given! If you deviate from this order, Euphoria cannot guarantee that the Cabman MDT will function in accordance with the requirements.

4.2.1 Place the (peripheral) equipment

Installing the (peripheral) equipment often (depending on the specific equipment) must meet specific location requirements. Keep this in mind during installation.

GPS Antenna must be placed in such a way that the top of the antenna has a clear view towards the satellites. The antenna functions optimally if it is mounted flat (magnetically) on a grounded ground. The quality of the reception can be negatively affected if the antenna is placed incorrectly, for example behind a coated window, under the dashboard, near electrical sources of interference etc. Consult the vehicle documentation for optimal antenna locations.

Cabman MDT box must be installed, so that the box points forward and the stickers from figure 4.1 are visible. When the internal taximeter is activated, the flaps on the front must also be freely accessible.

4.2.2 Connect the X101 power cable to the car

The power supply must be connected to a 12V power supply. Where the [2] is connected to the 12V and the [1] to the ground. This power supply must be permanent and may therefore not be interrupted during e.g. starting, or when the vehicle is stationary for a while. See 8.2 for the power requirements.

X101: Main supply rating 10A	Dir	Signal	Color	
				2
				1
1 0V	P	Main supply ground	BLACK	
2 +12V	P	Main supply IN	RED	

Main power supply input. Must be directly connected to Car battery, and may not be a switched voltage.

Figure 4.2 – X101 Powercable

4.2.3 Connect the X106 CAR cable to the car

Contact - The ignition lock should be connected to Contact-in (see figure 4.3) of the MDT box. This input is high-impedance, it works with a low signal current.

Pulse - The MDT is compatible with most standard pulse signals found in vehicles. The maximum pulse frequency is 10Khz.

X106 CAR

X106: Car		Dir	Signal	Color
1	Pulse out	I/O	LIN_OUT2	BLACK
2	User input 3	I	DIN3	RED
3	CAN1 low	I/O	CAN1L	ORANGE
4	CAN2 low	I/O	CAN2L	YELLOW
5	Contact in	I	DIN1	GREEN
6	Pulse in	I	DIN2	BROWN
7	CAN1 high	I/O	CAN1H	BLUE
8	CAN2 high	I/O	CAN2H	WHITE

Description	Value		
	Min.	Typ.	Max.
DIN1 = contact in signal	< 2V = OFF		> 3V = ON
DIN2 = pulse input signal	< 2V = LOW 0Hz		> 3V = HIGH 10 Khz counts on rising edge
DIN3 = Seat contact	< 2V = LOW		> 3V = HIGH Use pull-up when connecting to open collector or output
CAN1, CAN2 can bus			
Pulse out, LIN_OUT2	0 Hz 0V	-	10 KHz 12V

Figuur 4.3 – X106 CAR Cable

4.2.4 Optionally connect the printer cable

Printer – The printer must be connected with the X103 cable. The printer's power is supplied by the Cabman MDT. This will cause the printer to turn off automatically.

X103: Printer		Dir	Signal
1	COM3:RX	I	RXIN3
2	0V	P	GND
3	COM3:TX	O	TXOUT3
4	User output 2	O	POUT2

Description	Value		
	Min.	Typ.	Max.
POUT2, 12V digital output		800mA	1A
COM3 RS232 interface	-10V Baud: 1200		+10V Baud: 115200

Figure 4.4 – X103 Com1 cable

4.2.5 Optionally connect the external speaker

When the customer wants to connect an external speaker, it should be connected to the X210 connector, and enabled in the *General Options* of the MDT.

4.2.6 Connect the screen to the Cabman MDT Display

Place the USB-C X107 Cable on the back of the display. Then screw on the strain relief and place the display cover.

4.2.7 Connect the cables to the Cabman MDT Box

Connect the cables to the Cabman MDT and press the headers firmly. See appendix A.1 for an overview of the connections. The GPS Antenna must be connected to the SMB connector. Only use the antenna supplied by Euphoria for this. The GPS Antenna is correctly positioned when it clicks into place. Finally, the X107 Display cable must be connected. Figure 4.5 shows where the cables should be connected. Then bring the cables out through the cable duct.
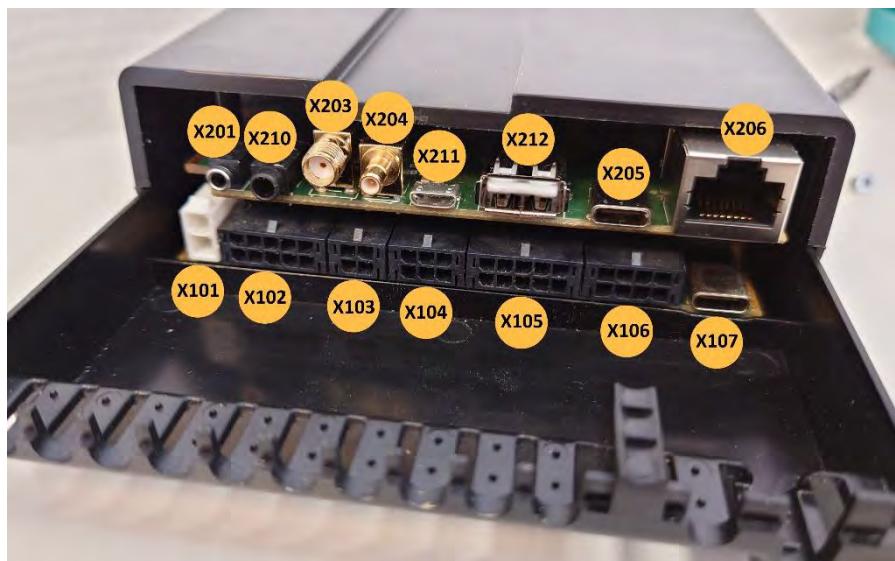
Figure 4.5 – Connections Cabman MDT Box

4.2.8 Securing the cables

After the cables have been routed out through the cable ducts, secure the cables with cable ties. The cable ties provide strain relief on the cables.
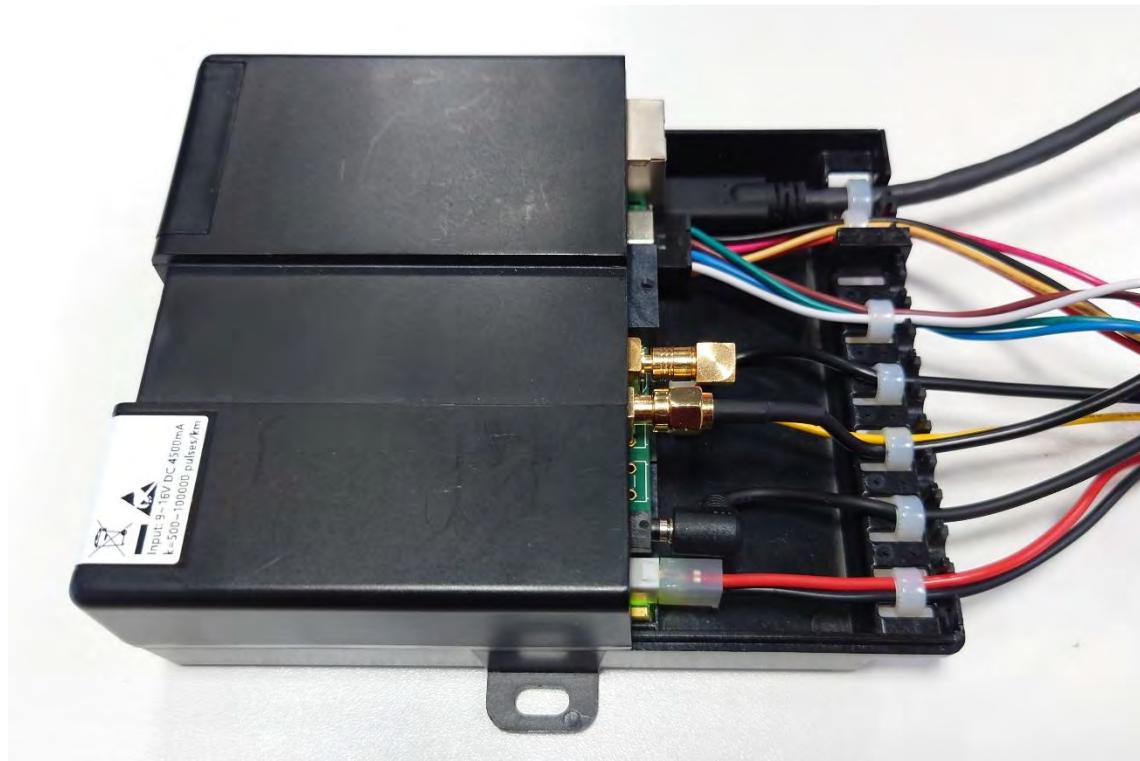
Figure 4.7 Secured cables

4.2.9 Close the cover and apply the seals of the MDT Box

Place the cover and close the cover by gently pressing it until it clicks into place, use the screw to lock the cover. Make sure all three flaps (3, 4 and 5) close.

Place seal 3 and 4 if the local authority requires this.
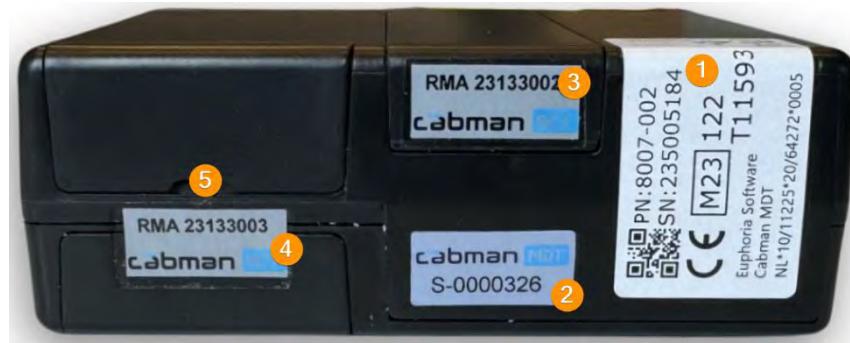
Figure 4.8 – Stickers 2

4.3 Calibration

Calibrating the Cabman MDT means testing the pulses per kilometer and checking the parameters of the self-diagnosis. You will be given the option to calibrate while activating the Cabman BCT or while performing an 'examination'.

The number of pulses per kilometer is shown in the form of the K-factor. Using external calibrated measuring equipment, such as the Cabman testkit, one or more actual kilometers is determined. The pulses that the MDT measures while driving can be measured using the 'Do measurement' button at the K-factor setup screen. Then press 'ok' and enter the number of pulses that correspond to one actual kilometer, this may differ by a maximum of 2% (20 meters per 1 kilometer).

4.4 Check

After a correct calibration of the Cabman MDT, you must also check the parameters from the self-test in addition to the K factor. Successful completion of the verification steps described in this section means that the Cabman MDT is working completely, correctly and properly. The self-test can be found under the button with the exclamation mark on the main screen under the heading 'self-test'.

The first line indicates whether any errors were detected. Then all individual parts are specified. If the first line indicates that there is an error, you can find below which part is not functioning properly. There is also the option of validating the touchscreen through the self-test. Here you can check the touch function and the colors of the Cabman MDT. Here is a list of the different checkpoints shown in the overview and how to check them:

1. When you start the car, the Cabman MDT screen should come on automatically
2. The Cabman MDT must also switch on as soon as a Workshop-card is entered. To test this, you must first log out and switch off the ignition.
3. The GPS can be checked by seeing if there is a fix with at least four satellites
4. The ODO meter can be checked by driving the vehicle, when driving faster than 5 km/h for a period of at least 15 seconds, the status must change to 'driving'.
5. The integrated motion sensor can be checked by viewing the status after driving the vehicle. This should be set to 'ok'.
6. The ignition switch can be checked by turning the key of the vehicle and waiting a few seconds, this will change the status to on or off.
7. The printer can be checked by pressing the print button in the overview screen, in addition, the status of the printer changes if it cannot connect.
8. If the CRC, integrity or motion sensor are not set to 'ok', please contact the Cabman Helpdesk.

5. Installation peripherals

This chapter describes the steps that must be taken to achieve a successful installation of Cabman MDT peripherals. Use this chapter as a reference during the installation process.

5.1 Printer

5.1.1 Installation
Place the printer in a location where the driver can replace the printer rollers in an ergonomic way. Then connect the X103 COM1 port to the MDT. The printer's power is supplied by the Cabman MDT. This will cause the printer to turn off automatically.

5.1.2 Configuration
The commercial option can be activated by means of unique codes which are linked to the serial number of the Cabman MDT. These codes can be requested by contacting the Euphoria. Then you can turn on the Printer option. Euphoria recommends that you perform a final check after successfully completing the installation: successfully completing the check steps described in this section means the Printer is working completely, correctly and properly.

1. Login with as a driver
2. Start a trip.
3. Stop and release this trip.
4. Print the receipt

5.2 Internal Taximeter
The Cabman MDT can optionally be supplied with an integrated approved taximeter. The commercial option 'Taximeter' must be activated for this.

Important! If the internal taximeter option is activated, and the MDT activation is completed, this option can no longer be disabled! This in connection with regulations regarding enforcement and control.

5.2.1 Taximeter options
Due to local regulations, the following options can be enabled or disabled:

Printer needed for taximeter
If this option is 'On', the taximeter can only be started if the connected printer is active and functioning correctly. If local data communication is used, this interface must also function correctly.

5.2.2 Tariffs
Tariffs files can only be created by Euphoria. Please contact Euphoria to obtain the desired rate files.

5.2.3 Seals
If required by local regulations, the taximeter tailgate must be sealed. This must be applied by the workshop as the last act after the operation of the MDT has been fully checked. Stick the seal on position 3 and 4 indicated in figure 5.

Figure 5.1 – Taxameter seal

Please note that the seal must be inspectable from above for breakage.

5.2.4 Totalizers

As soon as the internal taximeter is activated, the totalizers of the taximeter can be called up in the information screen, see figure: 5.2. There is also a K-factor update counter to read in this screen, scroll down for this
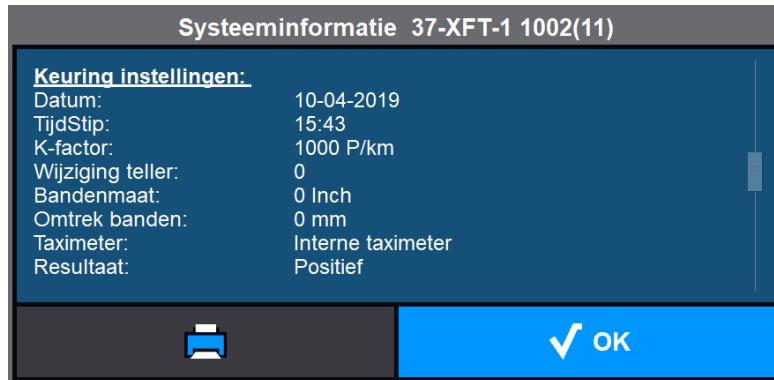
Figuur 5.2 - Systeminformation

5.2.5 Examination

After successful completion of the installation, an installation inspection must be carried out. The internal taximeter can always be operated in workshop mode for the purpose of the inspection.

Carry out the inspection in accordance with the procedure described in [5]

If the inspection has been successfully completed, the inspection seal is placed in a permanently visible place.

5.3 Alarm button

5.1.1 Installation
Place the alarm button within reach of the driver. The alarm button is connected to connector X105:8 via a pull-up resistor. **Please note that the alarm button is low active.** See the connection diagram A.4 for details.

5.1.2 Configuration
The alarm button can be enabled in the general options during activation or workshop mode. Only turn on the option if the button is physically connected to the MDT.
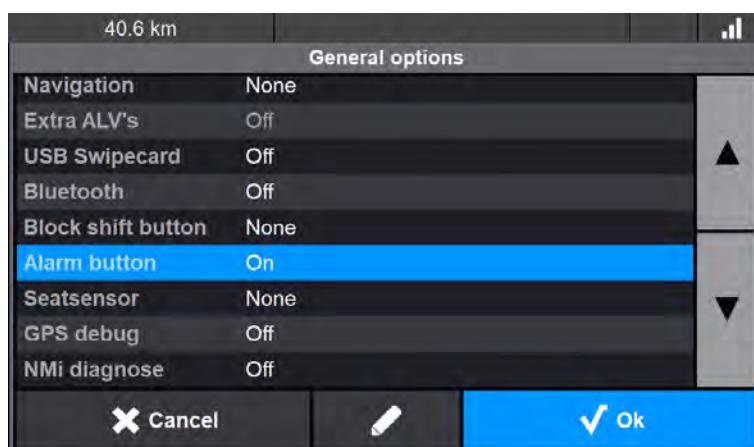
5.1.3 Verification
To ensure that the alarm button is working correctly and to prevent false alarms, it is important to test the alarm button. In workshop mode, go to the settings tab and then press the hardware control button.
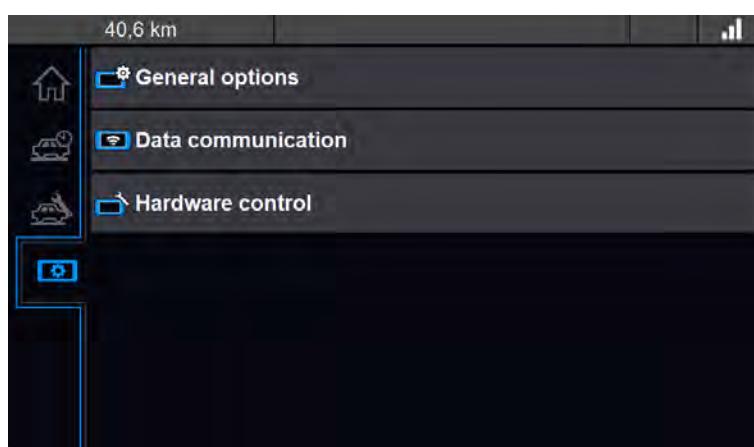
The input device alarm button should be off.
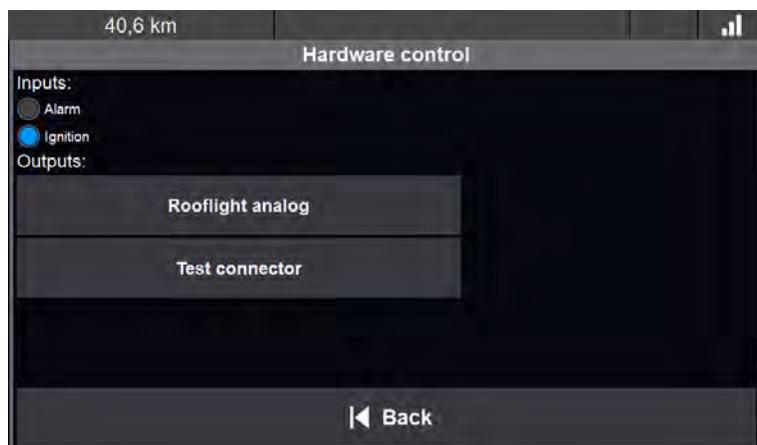
As soon as you press the alarm button, it will be on.
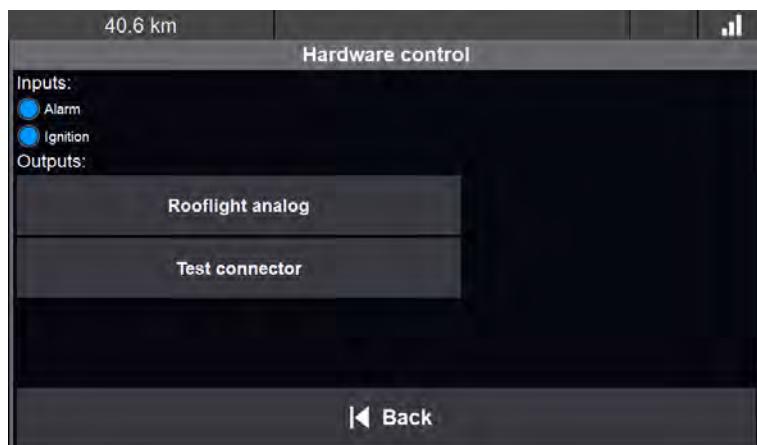
6. Cabman MDT software extensions

This chapter describes how to activate software extensions. Use this chapter as a reference during activation.

6.1 Commercial options

Commercial options can be activated by means of unique codes which are linked to the serial number of the Cabman MDT. These codes can be requested by contacting the Euphoria.

6.1.1 Taximeter module

One of the commercial options is the integrated Taximeter. When you have activated this option, you must re-inspect the Cabman MDT and set the option "Coupling taximeter" to "internal taximeter". For more information about the taximeter option see section: 5.2.

6.1.2 Datacom

When you have activated this option, the option is released to edit the Datacom settings. Here you have to enter the CompanyID and Unitcode together with the SIM card provider.

6.1.3 Printer

When you have activated this option, you can select the Prints just connected.

6.1.4 Cabman ECO

When activated you can use Cabman ECO (with or without Beijer Can Interface)

7. Options for the Cabman MDT

When you are logged in with your BCT workshop card, you can set the Cabman BCT with the following options:

7.1 Activation

The Cabman MDT must be activated when it is in deactivated state and when it is going to be used as an on-board computer for taxi. Press the activate button on the settings tab (see figure 7.2). This starts the activation of the Cabman MDT. Check and then fill in the following data:

1. License plate
2. Mileage on dashboard car when activated
3. K-Factor - minimum 500, maximum 100000 pulses/km
4. Tire size in inches
5. Tire circumference in mm
6. Presence of a link with taximeter
7. Test result - if the data is good, the MDT is correctly calibrated (section: 4.3) and the MDT is functioning correctly (section: 4.4), enter positive here.
8. Remark - Additional information about inspection/examination result.

Then press the Ok button to complete the activation. The Cabman MDT is now activated.

7.2 Examination

Change settings for similar to the activation. Do note that some data cannot be altered.

Activation data
1. License plate
2. Mileage on dashboard car when activated

Examination data
1. K-Factor - minimum 500, maximum 100000 pulses/km
2. Tire size in inches
3. Tire circumference in mm
4. Presence of a link with taximeter
5. Test result - if the data is good, the MDT is correctly calibrated (section: 4.3) and the MDT is functioning correctly (section: 4.4), enter positive here.
6. Remark - Additional information about inspection/examination result.

Then press the Ok button to complete the survey. The Cabman MDT is now approved. These inspection data are stored and can be viewed by the workshop and companyowner by using the "History" button.

7.3 Software updates

The update button on the settings tab can be used for the different update:

1. Software update
2. Configuration updates:
   a. Taximeter tariffs
   b. Receipts/logo's

    c. Favorites lists Rit- en activiteiten types en favoriet lijstje
    d. Standard chat messages
    e. Communication provider configuration (KPN, Vodafone, etc).
       etc

Update files: are only available through Euphoria. Place the update files on a USB stick. Then go to software update in the settings tab. Errors may arise during the update procedure. For details see: 7.4

Update authentication: The Cabman MDT will now restart itself and ask you to enter your workshop pin code again. Now insert the USB stick into the Cabman MDT, it will now perform the update.

7.3.1 Deadman-switch

If the Cabman MDT application is no longer accessible or responds due to a software error, the software update function can no longer be reached via the application. A special provision has been made to directly enter the update authentication function after a power cycle. To do this, keep swiping/touching the touchscreen while the ignition is off during the restart. In this case, the update authentication is started immediately

7.4 Error-codes during software update

This section provides an overview of the errors that can occur during the software update and describes a possible cause and the corresponding possible solution for each error. A software update error is clearly identified by the red "Application Error" screen with the associated error code, see figure 7.3.

Figure 7.3 – Application Error: Error code

Below you will find an overview of the software update errors that can occur in the Cabman MDT.

Error	Subcode	Possible cause	Possible solution
100		MDT application doesn't respond	Update software via deadmanswitch 7.3.1
101		MDT application doesn't respond	Update software via deadmanswitch 7.3.1
102		Updater started without the installation flag	Repeat the update but initiate from the workshop
103		Appmode is not set	Restart the mdt, contact Euphoria helpdesk.
300		Integrity failure in de MDT application	Return the Cabman MDT to Euphoria
301		No update file found	Check USB stick, reinsert it & try again
302	1	The update file has no name	Check the usb-stick and try again

	2	The destination of the update file is not a valid directory	
	3	The destination of the update file has not the correct permissions	Contact Euphoria helpdesk and ask for a valid update file
	4	The destination of the update file can't be read	
303		Problem with USB-stick	Try again with a new USB-stick
304	1	The update file has no name	Download the update file again, put it on the USB-stick and try again
	2	The mountpoint has no name	
	3	cryptDevice doen't exsist (needed for decryption)	
	4	Update file is 0 bytes in size	
	5	Can't open the update file	
	6	de update file is not encrypted with LUKS (Linux Unified Key Setup)	
	7	Initializing the decrypt of the update	
	8	crypt_load failed	
	9	Decryption with password failed.	
	10	Retrieving information of the cryptdevice failed	
	11	Unable to mount the encrypted file	
	12	Failed to make a mountpoint for the encrypted file	
305		Some parts not installed	Contact Euphoria helpdesk for suitable update file
306		Update file doesn't contain packages	Contact Euphoria helpdesk for suitable update file
307		Update file contains incorrect packages	Contact Euphoria helpdesk for suitable update file
308		Internal problem on the MDT	Return MDT to Euphoria
309		Integrity error	Return MDT to Euphoria
312		Vehicle not authorised for update	Update is not authorized for this specific vehicle, contact Euphoria helpdesk.
313		Update not allowed on currenct version	
314		Unkonwn card	Trustedpath not set or invalid update. Contact Euphoria helpdesk

7.5 Deactivate

The Cabman MDT must be taken out of use (deactivated) the moment it is permanently removed from a vehicle, for example to be converted into another vehicle. During deactivation, all stored data will be deleted with the exception of system data and position data, after this data has been successfully exported to a USB stick. You must therefore have a USB stick available with sufficient free storage capacity (at least 4 GB). You can deactivate the Cabman MDT by pressing the deactivate button on the settings tab.

7.6   Eco Calibration

1. Logon with the workshop code.
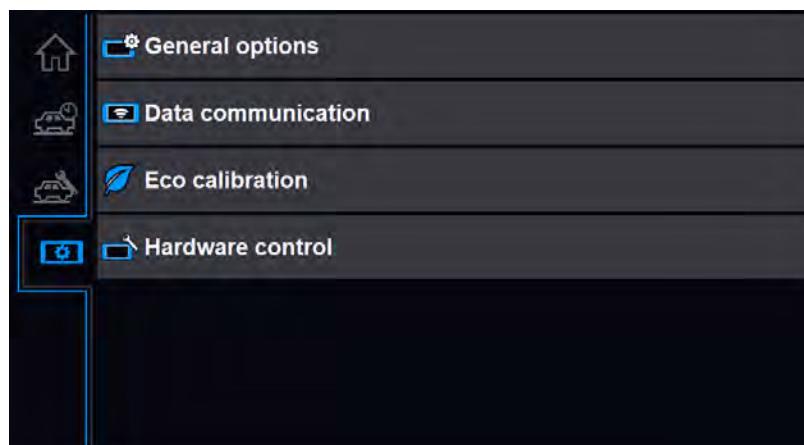
2. Press Eco calibration when car is not moving.
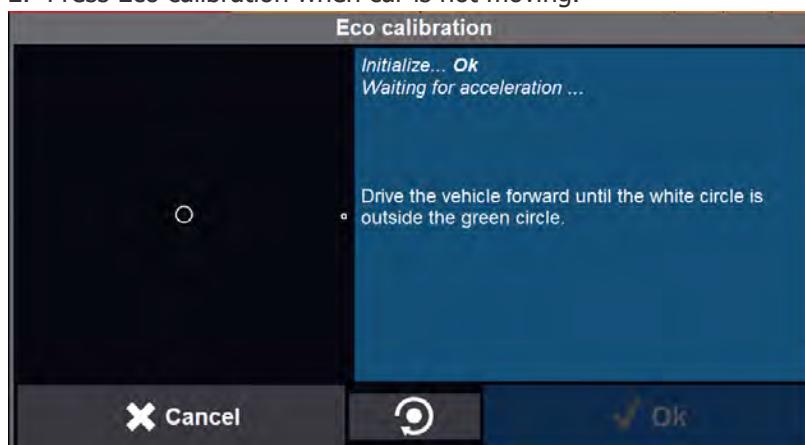
3. Now drive the car forward and wait until the MDT tells to hit the break.
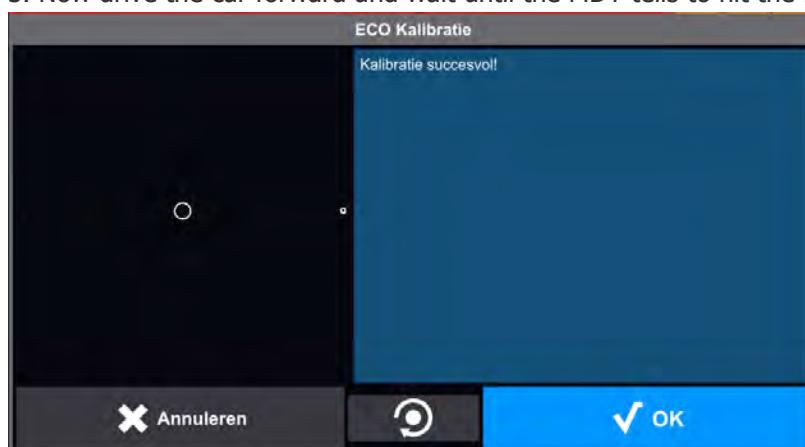
4. Press OK, Calibration is done.

8. Technical specifications

This chapter describes the technical specifications of the MDT. This chapter should be used as a reference for connecting and using the MDT.

8.1 Environment

The Cabman MDT is designed to operate reliably and within specifications within the environmental conditions described below

Description	Value	Remarks
Operating ambient temperature	0ºC ... +55ºC	-
Peak operating ambient temperature	-20ºC ... +70ºC	Functional, full lifetime not guaranteed
Operating relative humidity	10%...90%	Condensing
Storage temperature	-20ºC ... +70ºC	-

8.2 Power

The BCT requires a power source that supplies 12V continuously without interruption. Typically, it connects directly to the vehicle's battery. The table below contains the BCT power supply specifications:

Description	Min.	Typ.	Max.
Input voltage	9.0V	12.0V	16.0V
Input current @ 12V (normal)	200mA	500mA	4500mA
Input current @ 12V (standby)		2mA	20mA

8.3 Essential Characteristics

		range	resolution
Electromagnetic environment class		E3	
Mechanical environment class		M3	
Climatic environment	Temperature	-20 ºC / +70 ºC	
	humidity	condensing	
	intended location	closed	
		range	resolution
Distance signal generator constant k		k=500 pulses/km to 100000 pulses/km	1 km
Time tariff		0,00 CU/h to 3600,00 CU/h	0,01 CU/h
Distance tariff		0,00 CU/km to 140,00 CU/km	0,01 CU/km
CU = Currency unit			
Time measuring signal frequency		10 Hz	
Maximum measuring range distance		42949 km	
Maximum measuring range time		1193 h	
Minimum storage time of metrological data		1 year	

8.4 IO Specifications

Below are the electrical specifications of the various connections of the MDT. The digital input and output values refer to the ignition switch, odo and connectors. The digital power output relates to controlling skylights or other switched peripheral equipment.

8.4.1 X102 AUX1

X102 AUX1

X102: BCT interconnect

Pin	Name	Dir	Signal	Color
1	Pulse out	O	LIN_OUT1	BLACK
2	COM1:RX	I	RXIN1	RED
3	COM2:RX	I	RXIN2	ORANGE
4		I	RXIN8	YELLOW
5	0V	P	GND	GREEN
6	Contact out	O	POUT1	BROWN
7	COM1:TX	O	TXOUT1	BLUE
8	COM2:TX	O	TXOUT2	WHITE
9		O	RXIN7	
10	+12V	P	Main supply feed through	

```
10  9  8  7  6
 5  4  3  2  1
```

Description	Value Min.	Typ.	Max.
Pulse out	0 Hz 0V	-	10 KHz 12V
POUT1, 12V digital output		800mA	1A
COM1, COM2 RS232 interface	-10V Baud: 1200		+10V Baud: 115200
+12V, Main supply feed through			5A

Figure 8.1: X102 Aux

8.4.2 X103 COM1

X103: Printer		Dir	Signal
1	COM3:RX	I	RXIN3
2	0V	P	GND
3	COM3:TX	O	TXOUT3
4	User output 2	O	POUT2

Description	Value Min.	Typ.	Max.
POUT2, 12V digital output		800mA	1A
COM3 RS232 interface	-10V Baud: 1200		+10V Baud: 115200

Figure 8.2: X103 COM1

8.4.3 X104 COM2/3

X104 COM2/3

X104: Add-on		Dir	Signal
1	COM4:RX	I	RXIN4
2	COM5:RX	i	RXIN5
3	0V	P	GND
4	COM4:TX	O	TXOUT4
5	COM5:TX	O	TXOUT5
6	User output 3	O	POUT3

Description	Value Min.	Typ.	Max.
POUT3, 12V digital output		800mA	1A
COM4,5 RS232 interface	-10V Baud: 1200		+10V Baud: 115200

Figure 8.3: X104 COM2/3

8.4.4 X105 I/O

X105 I/O

X105: Extension		Dir	Signal
1		-	n.c.
2	COM6:RX	I	RXIN6
3		-	n.c.
4		-	n.c.
5	0V	P	GND
6	User input 4	I	DIN4
7	COM6:TX	O	TXOUT6
8		I	RXIN9
9		I	RXIN10
10	User output 4	O	POUT4

Description	Value Min.	Typ.	Max.
POUT4, 12V digital output		800mA	1A
COM6 RS232 interface	-10V Baud: 1200		+10V Baud: 115200
RXIN9,10 RS232 interface	Low < 0.8V		High > 2V
DIN4, digital input	-12V < Low < 2V		High > 3V

Figure 8.4: X105 I/O

8.4.5 X106 CAR

X106: Car		Dir	Signal	Color
1	Pulse out	I/O	LIN_OUT2	BLACK
2	User input 3	I	DIN3	RED
3	CAN1 low	I/O	CAN1L	ORANGE
4	CAN2 low	I/O	CAN2L	YELLOW
5	Contact in	I	DIN1	GREEN
6	Pulse in	I	DIN2	BROWN
7	CAN1 high	I/O	CAN1H	BLUE
8	CAN2 high	I/O	CAN2H	WHITE

Description	Value Min.	Typ.	Max.
DIN1 = contact in signal	< 2V = OFF		> 3V = ON
DIN2 = pulse input signal	< 2V = LOW 0Hz		> 3V = HIGH 10 Khz counts on rising edge
DIN3 = Seat contact	< 2V = LOW		> 3V = HIGH Use pull-up when connecting to open collector or output
CAN1, CAN2 can bus			
Pulse out, LIN_OUT2	0 Hz 0V	-	10 KHz 12V

Figure 8.5: X106 CAR

Part III
Company owner

Cabman MDT installation manual

9. Introduction

The first time a company owner logs in, the Cabman MDT asks for the company details, these must be entered by the company owner. This data can be adjusted at a later stage (by the company owner). After entering this data, this specific Cabman MDT is locked to the data just entered. Read the general part I in advance for a product overview.

10. Company owner functions

10.1 Companylock

The company lock is tied to the company. Drivers who then start working with the Cabman MDT will drive under the flag of the company who has entered the data. The driver can see this by the name/number that is displayed on the home screen of the Cabman MDT.

10.2 Export data

The company can use all data recorded in the company lock, with the exception of minute-by-minute position data and security data. After logging in as a companyowner, all the data that the company may have are immediately available under the Export button.

The company can activate the Export button by inserting a USB stick into the Cabman MDT. After a few seconds the button will become active and with one push of the button the necessary data will be exported

10.3 Company details

Here the company can enter specific details which are not bound to be set by a workshop.

10.4 Configuration update

For some settings it's possible to update them without the need of a workshop. Updating software a workshop is needed. The procedure to update configurations is similar to software updates. Please read chapter 7.3

Part V
appendix

A. connection diagrams

See pages below.

A.1 MDT standard connection diagram
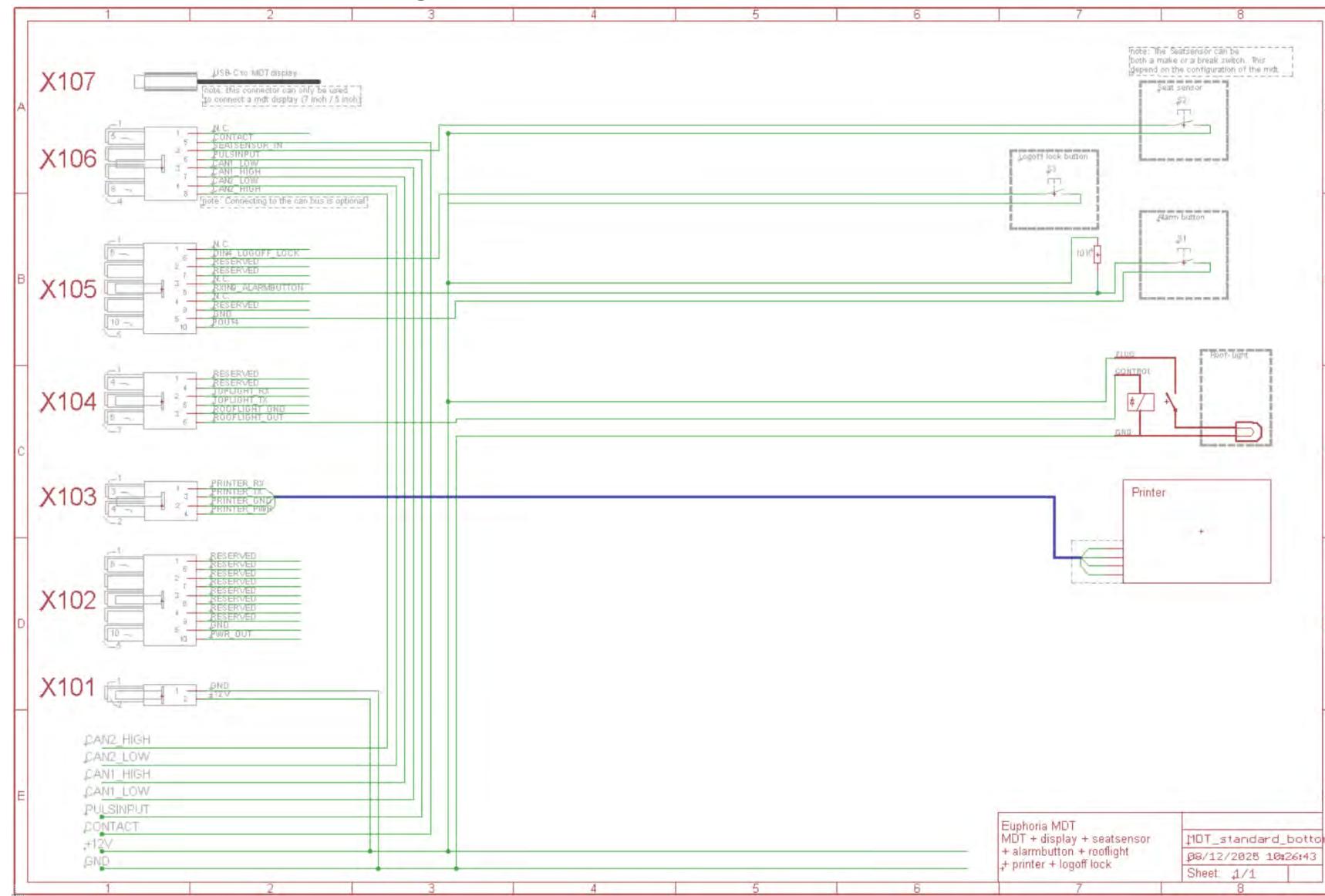
A.2 MDT connection diagram + Beijer
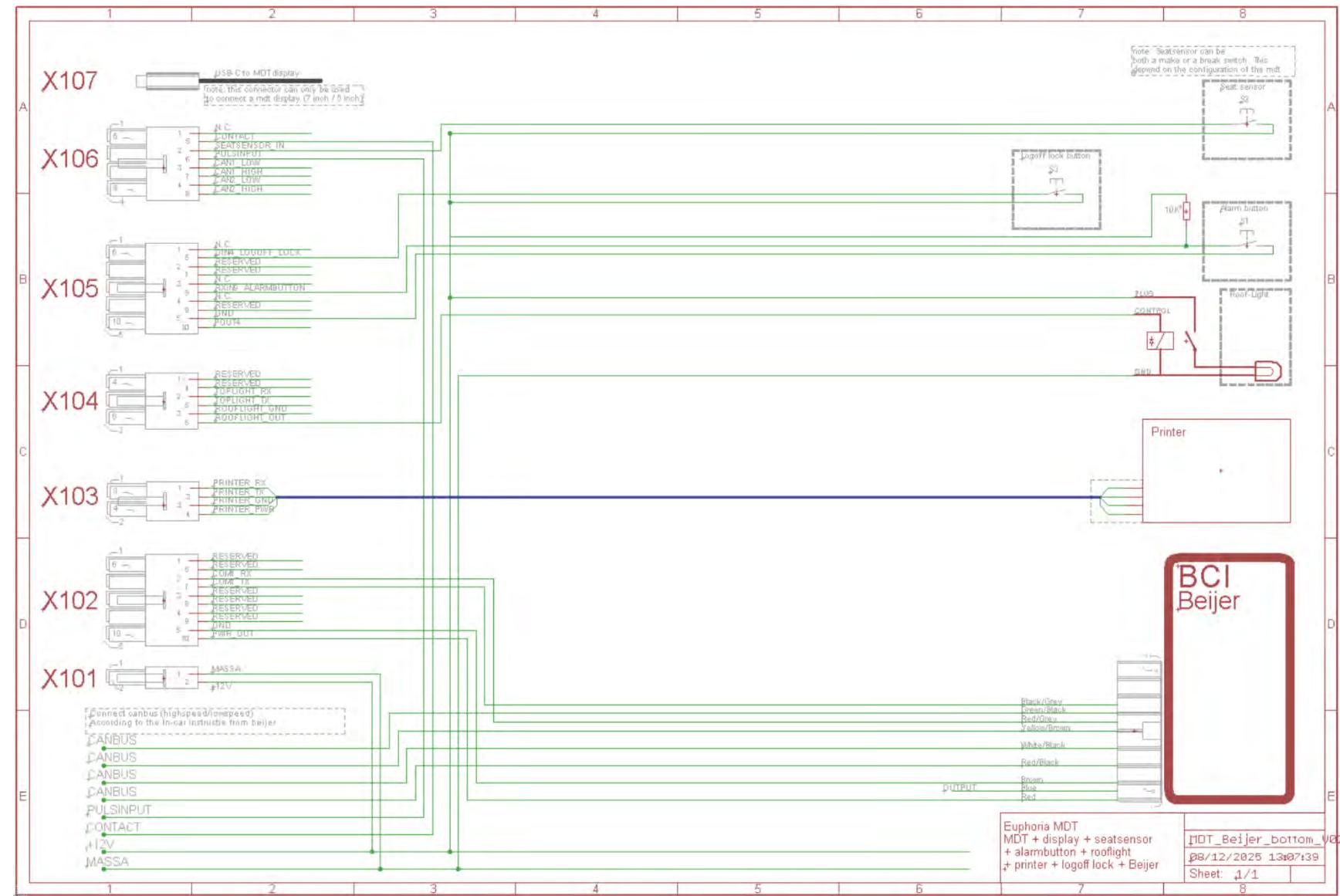
A.3 MDT connection diagram + iToplight
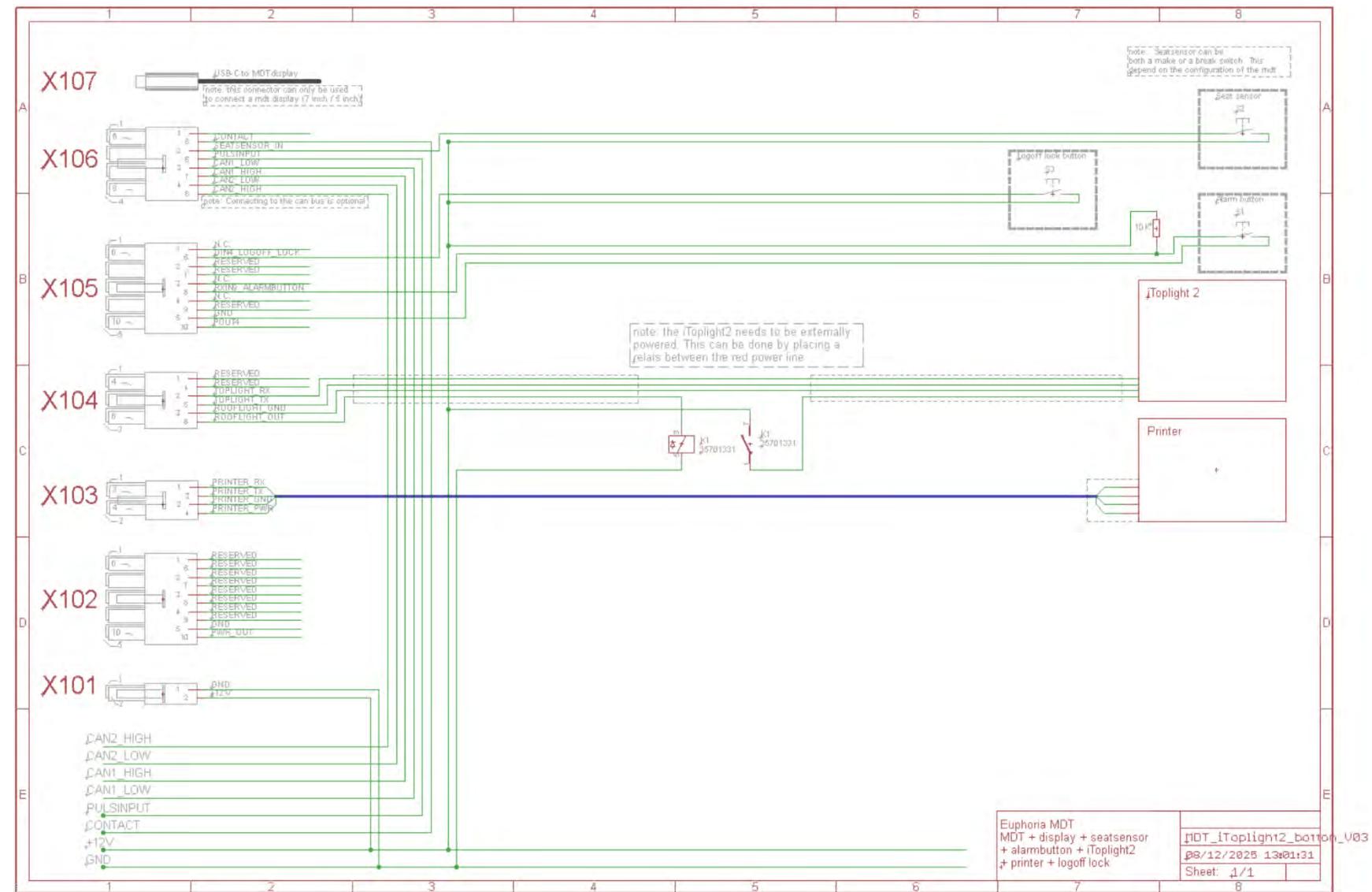
A.4 MDT connection diagram Alarm Button